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March 1958

SCHOOL MANAGEMENT

PRACTICAL SOLUTIONS TO SCHOOL MANAGEMENT PROBLEMS

What school managers should know about CLOSED-CIRCUIT TV

how to set up a FIRE PREVENTION *program*

Schoolhouse Design

PROBLEM SOLVING CLINIC

Can an elementary school be designed for future high school use?

SEE COMPLETE CONTENTS ON PAGE 3

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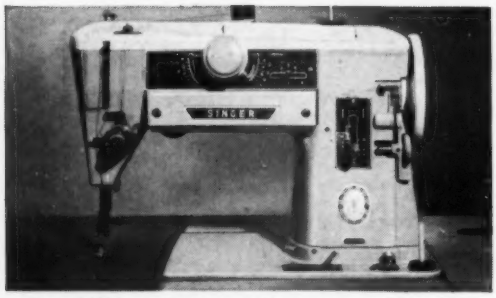
It's a cutting table...

It's a study desk!



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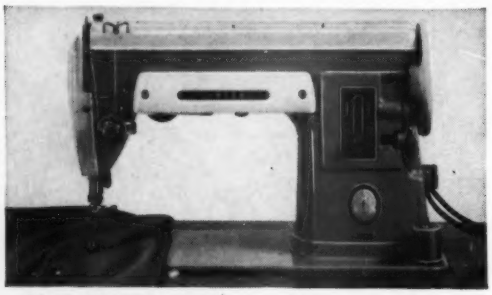

Slant-Needle 301, a truly practical machine! Slant needle affords superior sewing visibility. Many other new features such as fully enclosed direct gear motor.

You'll accommodate more students in less space—comfortably, efficiently—with the new SINGER Sewing Desks. Because with a SINGER 3-way desk you eliminate the need for additional cutting tables and study desks.

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(For more information, see last page)

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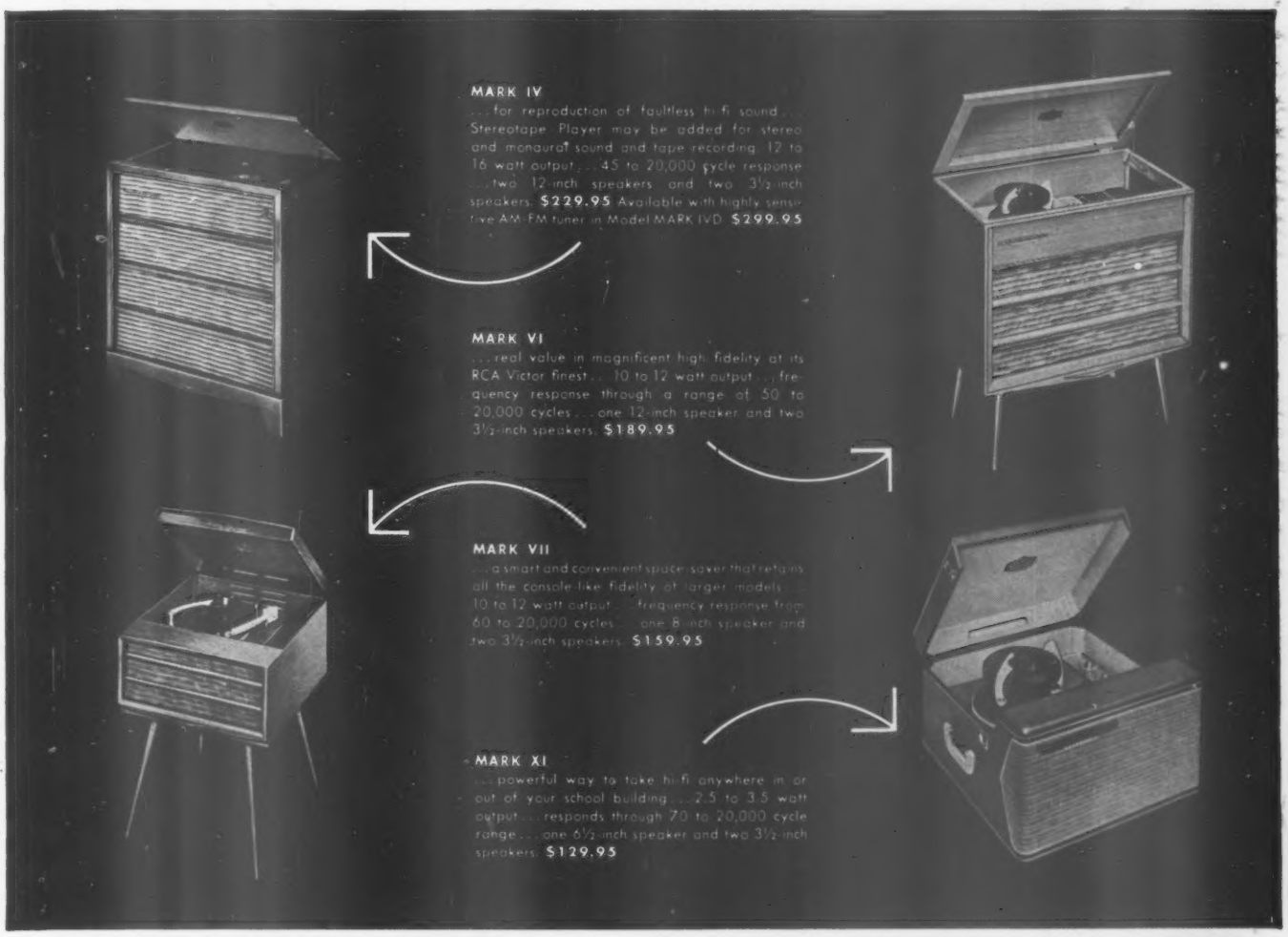
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(For more information, see last page)

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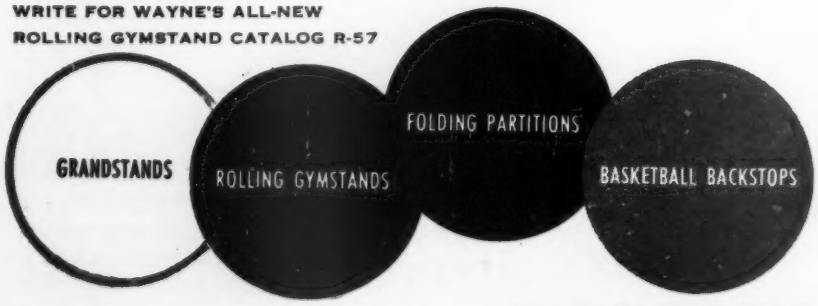

WAYNE
WAYNE IRON WORKS
144 N. PEMBROKE AVENUE, WAYNE, PENNSYLVANIA

(For more information, see last page)

Vol. 2 No. 3

S | M

Contents for March 1958

Features

Can an elementary school be designed for future use? 30
A panel of leading schoolhouse architects was asked to tackle this question. Here are their candid comments on the problems of convertibility.

How schools and business can help each other: The Tulsa plan 34
From Tulsa, Okla., comes a report of a cooperative plan between local business and the schools that is in operation and is proving successful.

What's right and what's wrong in new school construction 39
Observations based on a detailed survey of the actual experiences of educators working in 325 schools built during the post-war decade.

How your district can help hard-of-hearing children at minimal costs 42
An examination of the hearing-conservation program in operation at Park Forest, Ill. and an expert estimate of costs involved in setting up such a program.

How to set up a fire prevention program 46
Having previously examined the kinds of insurance to buy, the author now examines the question "how can we best prevent fires in our district?"

What school managers should know about closed-circuit TV 51
The time has come to drop the future tense so far as closed-circuit television is concerned. Here is a factual report on its present state of development.

Short Reports

Teacher visits aid school district 27
How traveling teachers help to improve a Minnesota school system.

Less sun—better light 63
A California school provides better illumination through exterior louvers.

Centralized feeding: solving the garbage disposal problem 66
How a district of 21 schools overcame this obstacle to a successful program.

Departments

Letters to the Editor 7
A sampling of correspondence

Things your public ought to know 17
Basic information for community education

News of the Schools 19
A digest of current happenings

Thought Starters 45
A monthly review of ideas and helpful hints

Press Releases 80
News from the business firms serving your schools

Reader Service Section 82

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- Jewelled Master Clock movement with automatically wound 72-hour spring power reserve.
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One floor vs. multi-story

SIR: Your magazine is terrific and, so far, has given me more help than have any of my professional magazines.

Perhaps you will help me with a problem? Have you had, or will you soon have, a story on the comparative costs of building the one-floor plan vs. the multi-floor plan school?

We desperately need such facts now.

CARL L. HOPKINS
SUPERINTENDENT OF SCHOOLS
DELAWARE, O.

■ *A prominent architectural firm has been working with us on the story you suggest. A set of actual educational specifications is being used, and two hypothetical building situations have been assumed—one calling for a multi-story structure, the other for a one-story school. The architects are "costing-out" the two solutions. Because of the work involved, the story may be several months in preparation.* ED.

No December issue

SIR: First of all, I wish to thank you for selecting my name for your original mailing of SCHOOL MANAGEMENT. I enjoy reading every page because it is written more clearly and concisely than any other publication I receive. This is one of the very few I would put on my shelf for later reference.

I have been upset the last few days and that is the second reason for this letter. Where is my December copy, free or not? Please send it right away.

ALTON M. TORGAN
CHAIRMAN, BOARD OF EDUCATION
STRATFORD, CONN.

■ *The November and December issues of* SCHOOL MANAGEMENT *were combined in one. In the future, SM will be published monthly.* ED.

Suggestions for articles

SIR: Thank you for the valuable help which SCHOOL MANAGEMENT is giving to its readers. The widespread coverage of information relating to such varied, pertinent topics is of great help to both the layman and the professional school man.

An area of concern to us all, nationally as well as locally, is that of teacher utilization (deployment of personnel, and rearrangement of subject matter, pupils, teachers, time, space and compensation). Experimen-

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put faster, safer maintenance within easy reach

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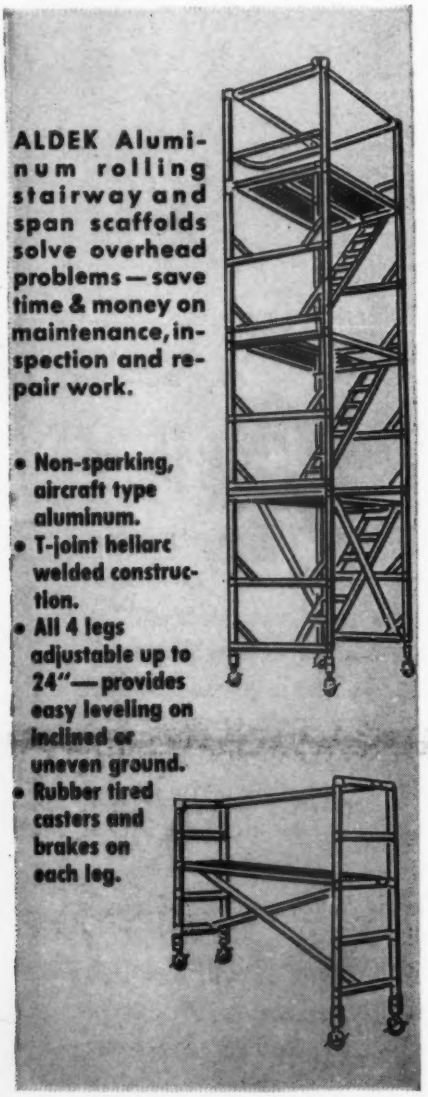

ALDEK Aluminum rolling stairway and span scaffolds solve overhead problems — save time & money on maintenance, inspection and repair work.

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Write for full information on ALDEK Aluminum scaffolds, stages and industrial ladders.

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(For more information, see last page)

tation with study in this field is occurring in various forms in many school systems in the United States. Yet, there is a need for some organ to gather and compile this information and make it available to all who might use it. Your SCHOOL MANAGEMENT magazine, with its national coverage and its system for collecting data has proved most effective and helpful in other areas. May I suggest that SCHOOL MANAGEMENT undertake this service? Any work begun in this field before the NSBA and AASA meetings, could, perhaps, be incorporated into their programs—and certainly into the many "buzz" sessions.

GENEVIEVE R. ONCLEY
TEACHER EDUCATION COMMITTEE
NEWTON, MASS.

SIR: I have been very happy to receive copies of the new magazine SCHOOL MANAGEMENT. I feel that the January, 1958 issue gave the finest coverage of many common school problems that I have seen in a long time.

It seems to me that your magazine is attempting to do a very fine piece of work in terms of practical suggestions, and what I call "how to do" articles for busy superintendents. I should like to suggest that you give thought to producing an article on combination classes (where one teacher teaches two grades in one room, third and fourth, fifth and sixth, etc.), similar to the article on double sessions in the January issue. These classes are necessitated because equal groups of people do not come year after year to enroll in our public schools. Some of the human relations factors revolve around students, parents, teachers, philosophy, district organization, and administration.

JENS H. HUTCHENS
SUPERINTENDENT OF SCHOOLS
CAJON VALLEY UNION DISTRICT
EL CAJON, CALIF.

■ *We appreciate suggestions for future articles. If you write, please give us as much detail as possible as to precisely what information you need.* ED.

Back issues of SM

SIR: We are sorry to note that we haven't seen the October, 1957 issue of SCHOOL MANAGEMENT. We would appreciate it if we could have a copy.

WILLIAM C. KUTZ
SUPERVISING PRINCIPAL
WILSON JOINT SCHOOL SYSTEM
WEST LAWN, PA.

■ *Back issues of SM are available in limited quantities. In the future, requests should be accompanied by a check for $1.00 per issue.* ED.

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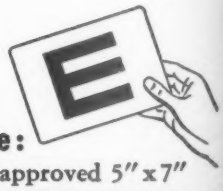

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Professionally approved 5" x 7" plastic Classroom Vision Demonstrator for school nurse teachers.

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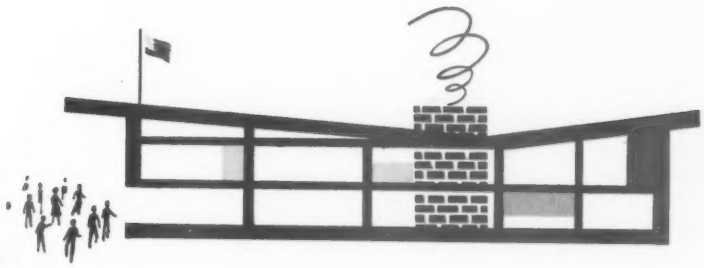
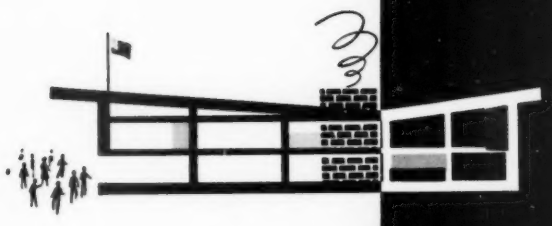


COLOR FIBERGLASS

an important NEW contribution to the educational environment by *Brunswick*



LEADERSHIP IN ANY FIELD of endeavor—be it in the arts, the sciences, commerce—carries with it the corollary responsibility of the continuing search for improvement.

Brunswick has met—and continues to meet—this responsibility.

Our continuing search for betterment showed us an important area for improvement.

COLOR:

True, we were the first to offer color in our furniture . . . and others have since followed . . . but, with limited contribution to educational processes.

And so, to a special team of educators, colorists and designers we assigned the investigation of the relationship between color and learning. Ultimate objective: "Give us a color program based upon educationally meaningful fact . . . not upon decoration alone."

Hundreds of administrators, architects, teachers and Board members were contacted. The consensus agreed with our original appraisal. Color, though attractive in and of itself, when put into a schoolroom often did little to enhance the learning processes.

Next, our team examined the entire scope of color theory—again talked to educators, architects, administrators, informed laymen . . . objective: a series of integrated school furniture colors which will create the required **Environment for Learning**.

The result? . . . dramatic . . . functional . . . Brunswick **Color for Learning** Furniture.

CREATE THE ENVIRONMENT WITH THE *Brunswick* COLOR

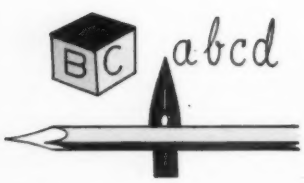
EDUCATORS . . . ARCHITECTS . . . COLORISTS KNOW THAT COLOR IS IMPORTANT IN TODAY'S SCHOOLS.

Color—proper color—properly used—is a recognized important aspect of a good learning environment. The proper color in furniture has an integrating effect upon the whole environment—ties together the various colors and materials.

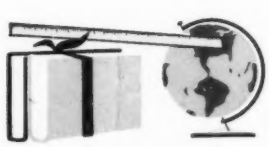
Color for Learning in the Fourth Grade. A neutral-to-stimulating environment. Note use of greens to offset strong sunlight exposure. Yellow in cabinets adds a touch of stimulation as does conference table arrangement.

Color for Learning in the Arts and Crafts R
priate to creativity and movement. Neutral
serves as non-clashing display for various co

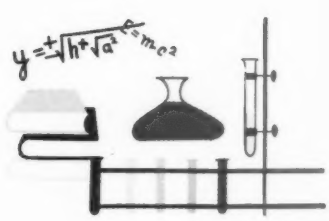
WHATEVER THE EDUCATIONAL LEVEL. Brunswick Color Helps Create An Educationally Purposeful Environment for Learning.



In Primary Schools—you can create the desired environment of intimacy, warmth, informality—the security of a homelike situation—through the use of natural building materials and gay colors.



In Upper Elementary and Junior High Schools—you can create the desired environment of exploration, guidance, cooperation and mutual community of interests through the use of proper materials and subtle colors.



In High School and College—you can create the desired environment of purposeful achievement, concentration, responsibility, growing maturity and life planning through the use of carefully selected building materials and sophisticated colors.

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T FOR LEARNING

R FOR LEARNING PROGRAM

Children are naturally colorful. They respond to a bright, cheerful environment. They like the unrestrictive qualities of the colors of nature brought into the classroom. They react to the moods created by properly color-planned conference, study and activity areas.

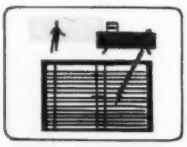
Brunswick "*Color for Learning*" furniture has an integrating effect upon the whole environment. It ties together colors and textures used in the school plant into an educationally purposeful environment.

d Crafts Room. A stimulating room appro-
. Neutral background (including cabinets)
various colored paintings and projects.

Color for Learning in the Kindergarten. Furniture and cabinet colors lend spacious, outdoor feeling to room. Color also used to delineate both quiet and stimulating areas depending upon the work or play to be done.

WHEREVER USED . . . Classrooms . . . Libraries . . . Cafeterias . . . Shops . . . Offices . . . Public Areas . . . Brunswick Color for Learning Helps Create An Educationally Purposeful Environment for Learning.

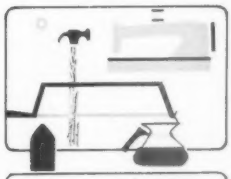
In Classrooms—a good visual and psychological environment appropriate to the activity.



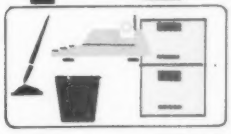
In Libraries—a good visual environment and a quiet atmosphere conducive to concentration and study.

In Cafeterias—an appropriately relaxing, appetizing environment in which to eat and socialize.

In Arts and Crafts Rooms—a good visual environment and to promote work organization, designate order.



In Offices—a good conference and business environment replete with friendliness, dignity, orderliness, efficiency and cooperation.



In Public Areas—reflect a warmth of welcome, community interest, purposeful activity and recreation appropriate to the space.

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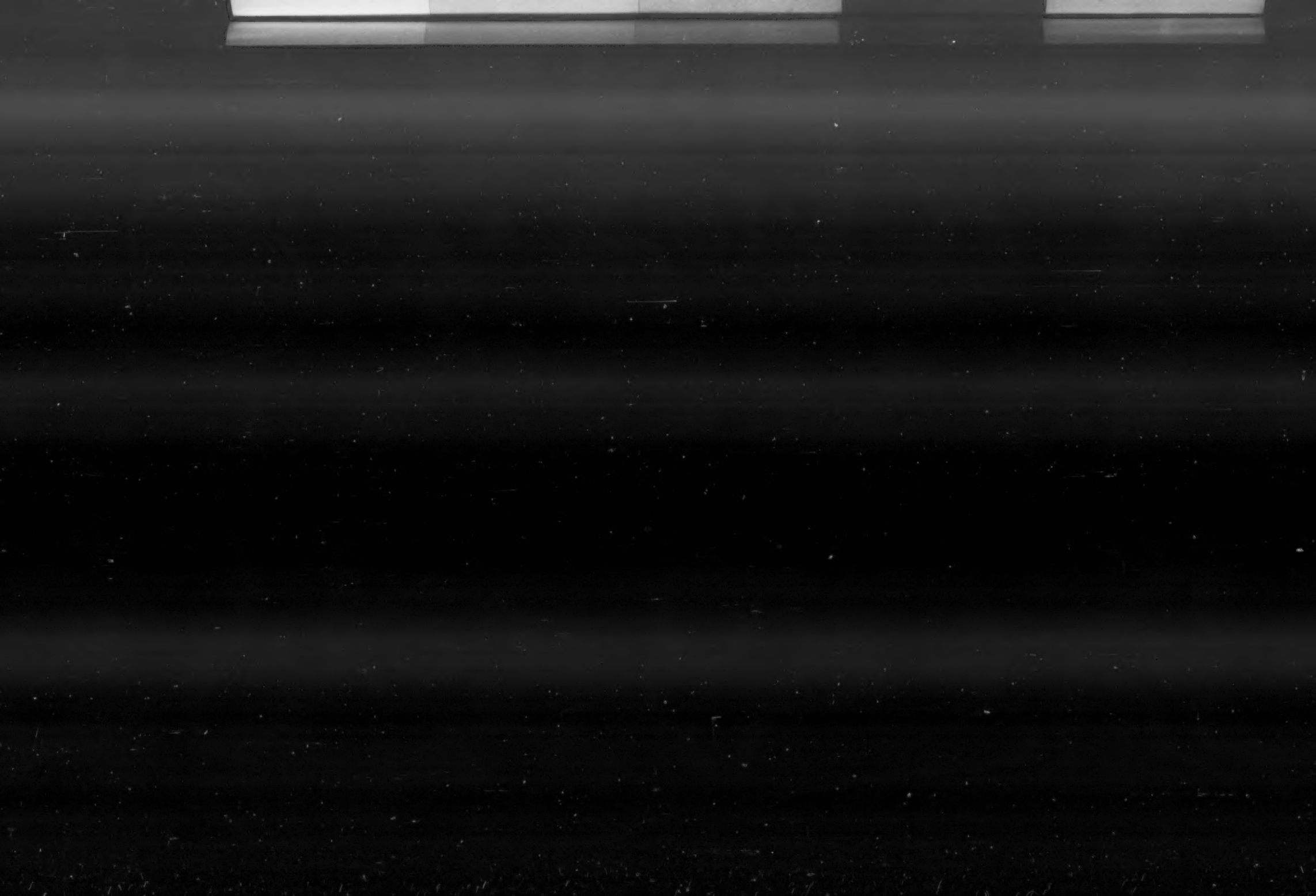

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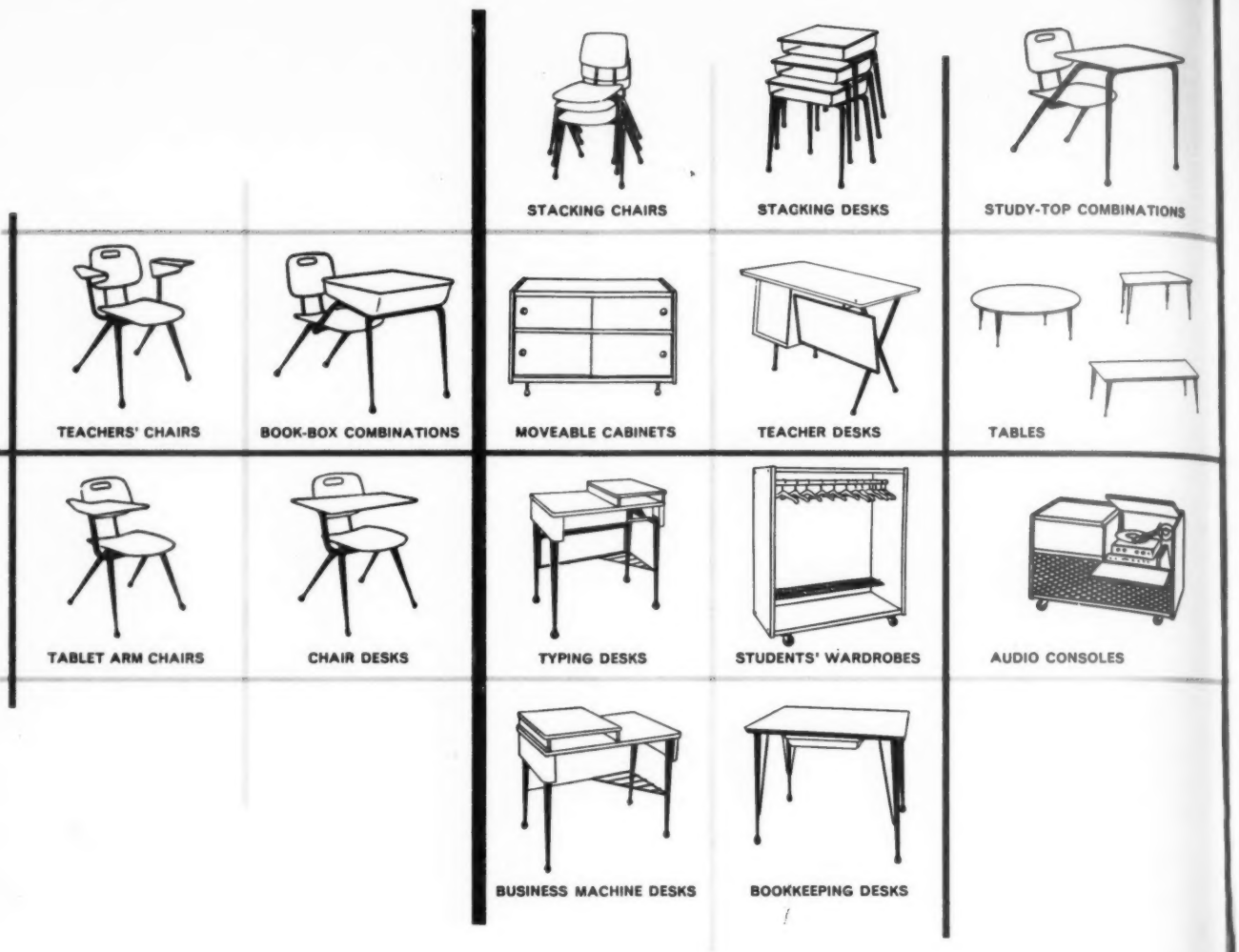
pound curves in seat and back fit body contours; chairs are proportioned to 8 sizes for kindergarten through college.

COLOR FOR LEARNING—BRUNSWICK FIBERGLASS



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THINGS YOUR PUBLIC OUGHT TO KNOW

Basic information that schoolmen can use as a part of a community education program

Comparative costs for 3 different types of bonds

■ ■ ■ There are three different types of school bonds commonly used by school boards. Circumstances often dictate which type is used. Frequently, however, a board will select a bond type purely to satisfy real or potential resistance from taxpayers.

Outlined in the copy and following chart is a highly simplified comparison of the nature and cost of the three most common issues.

The three types

Sinking Fund Bonds. All principal payments are deferred to a final maturity date. Tax payments are placed in escrow until the bonds mature. The fund can be invested, but protection difficulties are considerable.

Serial Bonds—equal principal, variable interest payment. Fixed annual principal payments are made, but interest payments *decrease* each year. Some school districts prefer this type because heavy early principal payments will free up bonding capacity if it is needed for further building.

Serial Bonds—principal and interest in equal annual payments. Payments are equal each year. The annual amount allocated to interest *decreases* as the amounts allocated to principal *increase*. Some bonds mature each year.

As the chart indicates, equal annual principal payments provide the lowest total cost. The spread is often large in total interest payments.

Unfortunately, with school taxes rising rapidly, few communities want to study the *ultimate* cost of a bond issue. Primary emphasis is placed on "what will it do to the tax rate." Often the school board, itself, is at fault for failing to present alternative plans.

It is important to remember that when the "tax climate" offers any hope of rapid payment (or even partial pay-as-you-go financing)—or if future district expansion is inevitable—the healthiest and cheapest course is to try to sell the public on the punitive cost of interest.

More detail may be obtained by consulting Bulletin No. 20, published in 1957 by the U. S. Department of Health, Education and Welfare. This valuable booklet is available from the Superintendent of Documents, in Washington, for only 55¢. **End**

The comparative total interest and principal costs per $1,000 bond at various interest rates and for different periods of years

Bond, by length of term	Costs at interest rate of —				
	1 percent	2 percent	3 percent	4 percent	5 percent
1	2	3	4	5	6
10 years					
Sinking fund	$1,100.00	$1,200.00	$1,300.00	$1,400.00	$1,500.00
Serial-equal principal, variable interest payment	1,055.00	1,110.00	1,165.00	1,220.00	1,275.00
Serial-equal total principal and interest[1] payment	1,055.62	1,112.62	1,171.16	1,231.48	1,293.76
15 years					
Sinking fund	1,150.00	1,300.00	1,450.00	1,600.00	1,750.00
Serial-equal principal, variable interest payment	1,080.00	1,160.00	1,240.00	1,320.00	1,400.00
Serial-equal total principal and interest[1] payment	1,080.89	1,166.97	1,255.65	1,348.83	1,440.78
20 years					
Sinking fund	1,200.00	1,400.00	1,600.00	1,800.00	2,000.00
Serial-equal principal, variable interest payment	1,105.00	1,210.00	1,315.00	1,420.00	1,525.00
Serial-equal total principal and interest[1] payment	1,107.14	1,219.50	1,338.94	1,467.54	1,594.93
30 years					
Sinking fund	1,300.00	1,600.00	1,900.00	2,200.00	2,500.00
Serial-equal principal, variable interest payment	1,155.00	1,310.00	1,465.00	1,620.00	1,775.00
Serial-equal total principal and interest[1] payment	1,161.26	1,335.78	1,513.36	1,730.40	1,917.05

[1] Total costs for equal total annual payments — principal and interest — are, as computed for the Unit 16 illustrations, on the basis of the next whole dollar above the minimum. Total costs are slightly less than those shown in Table 3, and the difference is greater or less as the amount of the next whole dollar varies from the minimum as derived from the index.

Clip this page for future reference

Walk in...Walk out design!

Jim Odell

The *Erickson* Portable features no bench braces to climb over. Girls appreciate this!

Sit down . . . enjoy yourself! See how easy it is with no bench braces to climb over. Just walk in . . . walk out. This exclusive feature frees the *entire bench* for seating . . . no lost space . . . no straddling on Erickson benches.

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(For more information, see last page)

NEWS OF THE SCHOOLS

A digest of current happenings in public education

Houston district eliminates recess

The Houston, Tex., school district has eliminated the daily 15-minute recess in its more than 100 elementary schools and replaced it with a 20-minute supervised physical education program.

Teachers work in pairs, one of them taking two classes to the playground every other day while the other one has free time for various uses, from conferring with parents to washing her hands. The next day the two teachers reverse their assignments. Lavatory-water fountain breaks of five to 10 minutes are scheduled as needed during the school day.

The change was instituted by the Houston school board in September, upon the recommendation of its curriculum cleanup committee. Schools put the plan into effect in various ways.

In many schools, such as the West University Place elementary school, the system is working well. The daily 20-minute physical education break is followed by a 10-minute lavatory-water fountain break; plus 10 minutes free time after lunch and another 10-minute "water break" at 1:50 p.m.—just before the first and second grades are dismissed for the day.

In other schools, teachers complained at a meeting of the Houston Teachers Association after a few weeks' trial, that third to sixth grade pupils need more time to let off steam. Children have no time for visiting, they complained, or opportunity to develop resourcefulness.

Teachers do not actually get free time every other day, as contemplated by the plan, some teachers told the meeting. Instead, they said, since they also must sit with their children during lunch hour, they are "tied" to their children all day long.

"I'd rather have recess and teach 15 minutes longer each day," a first grade teacher said.

A seven-member committee of the teachers' association met with the school board to discuss both complaints and praise concerning the new system. The board voted to continue the program through the school year. Administrators throughout the district will make no recommendations on the program until a year's trial ends.

Detroit ends half-day sessions in grade schools

Half-day sessions in elementary schools in Detroit have been eliminated this term for the first time since 1895. To accomplish this, almost 2,000 fifth-graders were transferred to schools as much as five miles from their homes.

Special buses pick up the students at designated points near their homes or their former schools. They are transported to new schools which had had empty classrooms. The students will remain in their new schools just this term. Next term a new group of fifth-graders will take their place in the transfer schools, remaining for a year. In this way students will be able to graduate from the sixth grade in their home schools.

The program will cost the Detroit school system 60¢ per pupil per day or nearly $6,000 per week.

Joint project helps problem children

Teachers and parents are working cooperatively in Santa Clara county, Calif., to help those children partici-

Too good to miss . . .

Columbus, O. . . . The board of education here is expected to make polio innoculation mandatory for school entrance. All children under 10 years of age, entering the school system for the first time will have to present proof of innoculation. Children who are physically unfit, or whose parents are conscientious objectors to innoculations, will be exempt.

The new regulation will parallel one in effect in Columbus now which makes innoculations for small pox and diptheria mandatory. It has been recommended by the county health commissioner and medical society.

Detroit, Mich. . . . A fight is brewing here over a proposal in the Michigan legislature for an amendment to the state constitution making Bible reading mandatory in public schools. The measure is being pressed as a means of curbing juvenile delinquency.

Under the plan students would be required to memorize the Ten Commandments and the Lord's Prayer by the sixth grade. Teachers would be required to read 10 Bible verses to their students each day.

Opposition has already been manifested by religious and educational leaders in this city. Otis Crosby, director of information for the board of education said the idea is "just an invitation to trouble."

New York City . . . A Brooklyn grand jury investigating lawlessness in the public schools has demanded that a uniformed policeman be stationed in each school to combat what it described as a "crime wave." The grand jury has made the demand three times in recent months.

The proposal has been opposed by all teacher organizations and the city's board of education. New York's police commissioner has also attacked the plan. However, continued difficulties have led city and state officials to investigate new ways to handle the problem of delinquency in the schools.

Great Neck, N. Y. . . . Teacher salaries will be raised here next year an average of $150. The increase will make the top pay in the Great Neck schools more than $10,000. Minimum pay for a starting teacher with a BA degree will be $4,700. The increase will give Great Neck teachers one of the top salary scales in the country.

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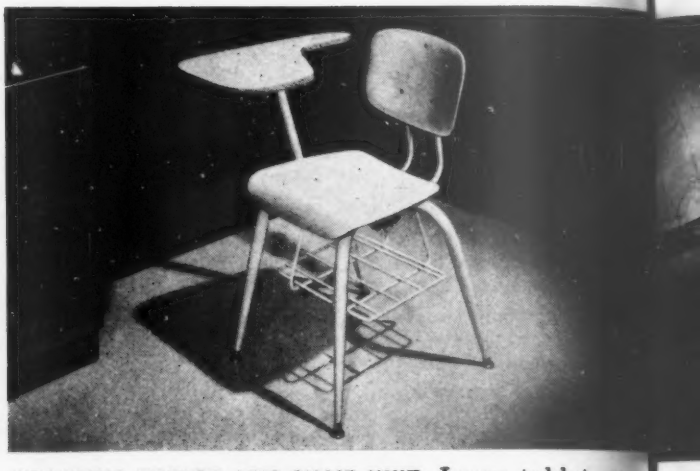
A COMPLETELY NEW CHAIR CONCEPT. The Student Line Chair stacks level, stacks snugly, stacks firmly balanced to greater number—takes up less space. Every feature was designed with the student in mind, providing advanced function. Notice the leg design...greater stability—nothing to trap heels. Self-adjusting glides hug the floor; longer wear. Extra large back and seat are contoured for *all position* comfort. Trim and attractive in appearance, this chair combines *every* feature for lasting satisfaction.



SPACIOUS TABLET ARM CHAIR UNIT. Large tablet arm allows plenty of "elbow room." Available left and right hand in three chair heights. Work surfaces adjustable 1″ up and 1″ forward. One-piece heavy gauge attachment arm, with unusually ample screw holding. This is the first tablet arm chair with arm adjustment *underneath* the seat for added strength—has great stability. Chair usable separately or with tablet arm, chair desk, study top or book box attachment. An important advancement in adaptability.

STURDY STUDY TOP CHAIR UNIT. Available left and right —in four chair heights and three top sizes. Work surfaces on all models are easily adjustable to three 1″ positions with single cap screw on either side. Free standing design; all corners open. Strong one-piece attachment arm, attaches under seat. Available with large book rack accessible from either side. Study top assembly interchangeable on study top desk (not pictured). Chair usable separately or with tablet arm, chair desk, study top or book box attachment.

THE IDEAL OPEN FRONT DESK. Free standing design eliminates cross bars; leaves maximum leg room. Large roomy book box of one-piece formed steel has rounded corners, no sharp edges anywhere. Cut back front for easy interior visibility. Easily adjustable to three positions, entirely *outside* the book box. No obstructions inside. Groups in all positions. Tubular steel understructure provides unusual rigidity. Strong swaged legs have generous sized self-adjusting floor glides. Top surface is durable melamine plastic.

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advanced feature for comfort, adjustability and rugged service

EFFICIENT CHAIR DESK UNIT. Ideally proportioned, generous-sized work surface, available right or left hand in three chair heights. Work surfaces adjustable 1″ up, 1″ forward. Sturdy one-piece attachment arm; ample screw holding. Great stability is achieved through chair leg design. Sturdy one-piece fixture underneath the seat provides adjustment means. Shown with large book rack accessible from either side. Chair usable separately or with tablet arm, chair desk, study top or book box attachment.

ROOMY BOOK BOX CHAIR UNIT. Free standing design; all corners open. Available left and right—in four chair heights. Work surfaces on all four models easily adjustable to three 1″ positions with single cap screw on either side. Heavy gauge attachment arm, attaches under seat. Book box assembly interchangeable on closed book box desk (not pictured). Chair usable separately or with tablet arm, chair desk, study top or book box attachment. Work surfaces are melamine plastic for easy care, long wear.

STUDENT LINE TABLES... an entirely new concept in streamlined stability. Sturdy free-standing design; no bars or cross braces to cramp legs, or to collect dust. Tables easily adjust to three 1″ height positions. All leg assemblies inset, leaving all corners open for efficient, unimpeded use. Oversize self-adjusting floor glides. Small sizes with plywood tops, larger sizes all hollow core, light weight, warp resistant. All work surfaces melamine plastic. A full range of all models and sizes up to 96″ to meet every educational need.

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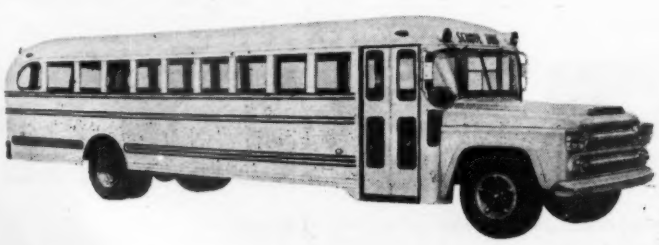


Wayne

WAYNE WORKS DIVISION
DIVCO-WAYNE CORPORATION

(For more information, see last page)

pating in the Cupertino school district's adjustment program for troubled children.

The project is aimed at discovering at the earliest possible moment the existence of difficult cases and at initiating proper handling at that stage. The teachers and parents, working with the county's Family Service Agency, are being made aware of existing community resources where a child or his family might receive help. They are also learning how to refer the child and his family to the proper agency.

The district's teachers are also studying interview techniques, to help them in their approach to the problem child. This study group is making use of sample case histories in order to learn more about how and why children present problems.

Business grant helps curriculum study

The Corning, N. Y., city school district has received a $39,400 grant from the Corning Glass Works Foundation to be used in improving curriculum and teaching services.

A considerable part of the money will be used to pay teachers' salaries for special summer study of the curriculum. These studies will place emphasis upon providing a program which allows all pupils, slow learners and gifted alike, to proceed at their own most rapid rates.

Particular attention will be given to providing means of challenging the gifted child to insure his maximum development.

Another part of the grant has been earmarked for the experimental employment of "floating" teachers in the fields of reading, arithmetic and science to supplement the regular faculty. These teachers would go from school to school to give help in special phases of the program.

Other funds from the foundation's grant will be used to provide scholarships for key faculty members, to obtain consultants to direct special teacher-training clinics, to provide for substitute teachers, and to secure the services of outstanding educators, psychologists, administrators and others to work with the school district's professional staff in evaluating the proposed secondary school program.

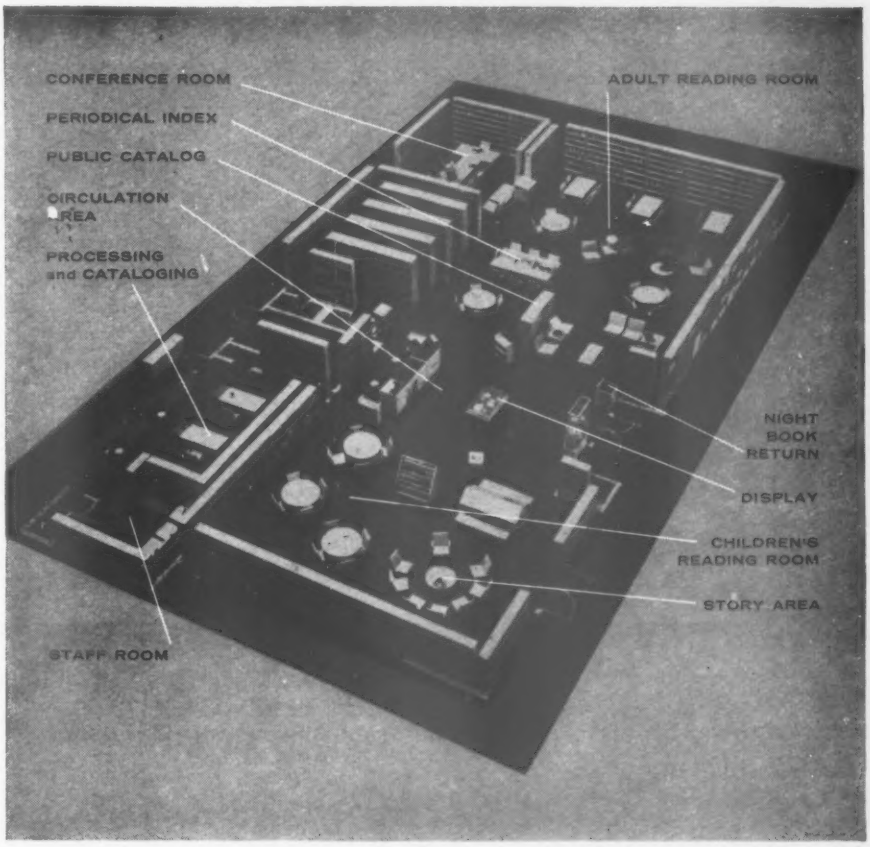
The program of instructional improvement has already been planned by the school district, but in a lesser degree and over a more extended period of time. The foundation's grant will enable the system to telescope three or four years of work into a much shorter period. For another example of business aid, see page 34.

System studies book rental to relieve costs

The Syracuse, N. Y., school system is considering a book rental plan for students in the ninth through 12th grades. At the present time these students must purchase their books, at a cost of $15 to $25 a year.

New York state law makes textbooks available to students in the first eight grades free of charge but no provisions are made for the upper classes. Many districts in the state, however, do make provisions to provide necessary textbooks for all their students through the 12th grade.

Syracuse officials have been studying many different textbook plans. In their area some schools sell books through a school store at cost, others distribute them free and still others charge a flat rate per term. In Syracuse students must buy their books through a commercial store at regular retail prices.



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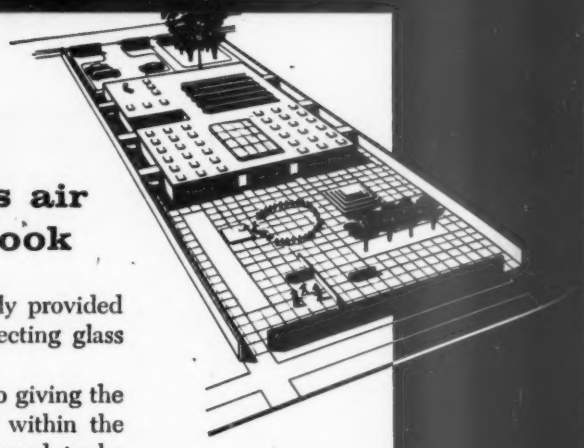

Hellmuth, Obata & Kassabaum designs air conditioned school with the "inward" look

Air conditioning solved the problem of an extremely restricted school site in the middle of a city block for Hellmuth, Obata and Kassabaum, St. Louis architects. In designing this proposed elementary school for kindergarten through sixth grade, they have made telling use of air conditioning as the key to the solution. By treating it as an integral part of the design, they have created a bright, charming educational world-within-a-world for a typical drab city neighborhood.

The entire site is enclosed in a solid masonry wall. The school turns inward and makes its own controlled environment of indoor-outdoor space. Except for the office rooms overlooking the open fore-court, the school has no windows onto the exterior. Instead, each grade classroom has a glass wall opening onto a roofed interior garden, which, like the rooms themselves, is liberally provided with skylights and heat-rejecting glass blocks.

The garden, in addition to giving the sense of space and nature within the building itself, is also designed to be used as an active teaching area, equipped with small animal cages, a fish pond and bird cages as well as plants and flowers. The kindergarten room opens onto its own private outdoor courtyard.

In addition to these features, the plan also includes such approved amenities as separate entrances for each classroom, a multi-purpose room with dropped center area and raised roof to increase flexibility of functions and efficient grouping of administrative and service areas. Structural system and materials were developed to provide maximum efficiency of air conditioning.

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Will the school you are planning *ever* need air conditioning? The answer is definitely – yes. That's why today – less than a year after its introduction – the HerNel-Cool II unit ventilator with optional air conditioning has been selected for use in more than 100 schools, which are either air conditioned now or have planned for it.

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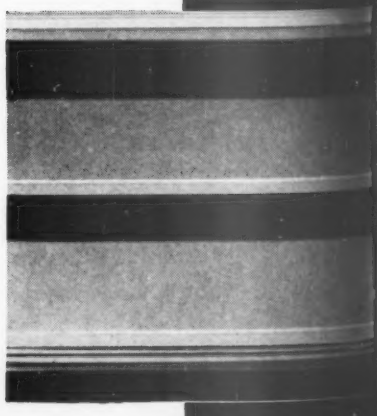

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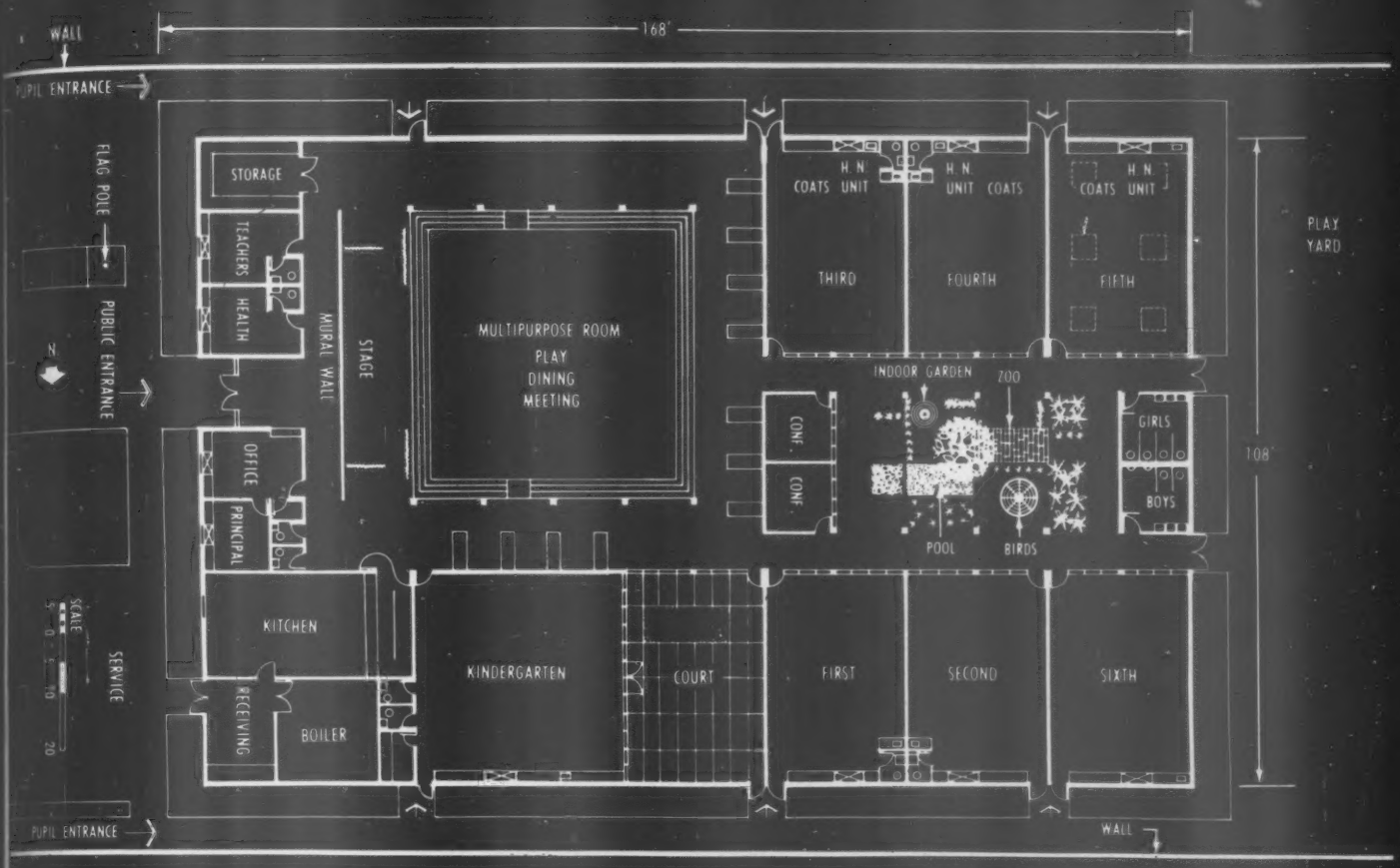
System of Classroom Cooling, Heating and Ventilating

(For more information, see last page)



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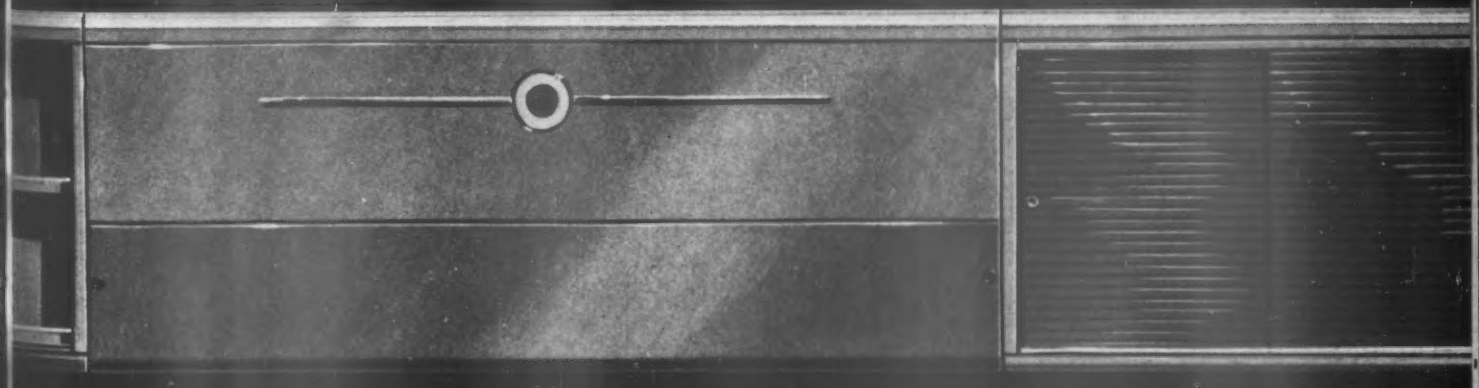
Herman Nelson console unit heater • Lobby



HerNel-Cool II units are as attractive as they are efficient — they harmonize with any classroom color scheme. Choice of seven standard colors. Five durable, decorative-laminated plastic top patterns. Matching utility cabinets and other accessories.

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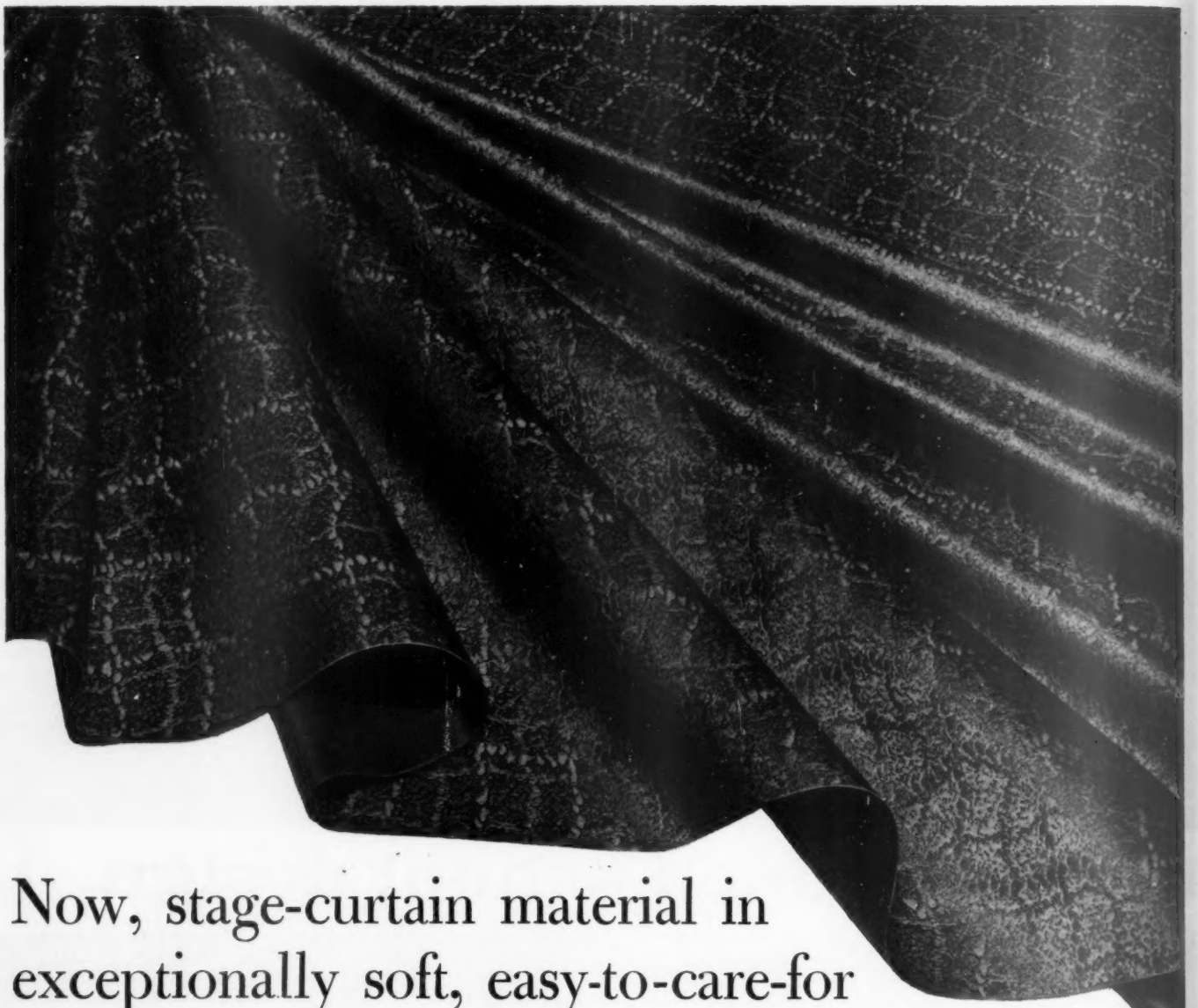
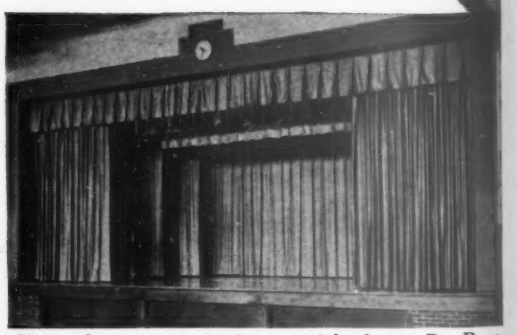


Now, stage-curtain material in exceptionally soft, easy-to-care-for vinyl coated glass fabric

At last, exceptionally soft, rich-looking stage-curtain material in long-lasting, easy-to-care-for vinyl coated glass fabric. Du Pont research developed this new "Tontine" flame-resistant vinyl stage-curtain material with balanced properties of softness, strength and finish for easy draping and long, maintenance-free service. "Tontine" remains permanently flame-resistant . . . no retreating is necessary.

New "Tontine" comes in iridescent Jeweltone* finish that sheds dust and cleans quickly with soap and water to remove smudges from handling. Select from five rich-looking colors—bronze, beige, green, turquoise and red—in Du Pont's Seine pattern—a luxurious textured bouclé. For free sample swatches, mail coupon today. *Patent applied for.



• Tests show stage-curtain material of new Du Pont "Tontine" will not shrink or stretch and keeps its original color and softness. It has exceptionally high tensile and tear strength and puncture resistance. It is ideal for matching darkening draperies, too.

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Flame-resistant vinyl drapery material

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*School or Firm*_____
*Address*_____
*City*_____ *State*_____

(For more information, see last page)

Teachers visit top schools to help Minnesota district

■ ■ ■ Officials of the Minnetonka, Minn., school system believe that they can learn new ways to improve their schools by observing the methods in use in outstanding schools around the country.

Accordingly, whenever any Minnetonka teacher or administrative official visits another school area on official business, he is asked to spend some time in the area's leading schools.

The system is put to particularly good use in the cases of staff members going to educational conferences, conventions or other meetings.

This year Minnetonka staffers will visit schools in Merriam, Kan., Kansas City, Mo., Berkeley, Calif., Winnetka, Ill., Indianapolis, Philadelphia, Seattle and New York City.

Before leaving Minnetonka, the staffers are given a list of areas to be considered when talking to officials of the schools visited. The list is broken into nine major sections including the community and parents; teachers and administrative staff; curriculum; enrollment; facilities; extracurricular activities; grades and reporting; students; and school philosophy.

Each such section is broken down into specific points that the visitors can use as question guides. For instance, under curriculum, the visitors are asked, first, to get a copy of the program of studies. Then questions are asked relating to special classes, any departmental organization, how students are grouped, guidance programs, special teaching techniques, use of visual aids, number of students in different courses and requirements for graduation.

Under philosophy, teachers are asked to evaluate whether the school operates under a traditional, academic or progressive philosophy, whether the school has a "well rounded personality" and what the homework situation is.

Superintendent William O. Nilsen is extremely enthusiastic about the plan. "We get a lot of good ideas from our visiting teachers, and we like to think that they perhaps impart some useful ideas to their hosts.

"We find that in almost every case our staff members come back with suggestions that we can put into effect in our schools. That way we can't help but profit from such visits."

For a free copy of Minnetonka's check list of questions for visiting teachers, circle number 791 on the Reader Service Card.

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(For more information, see last page)

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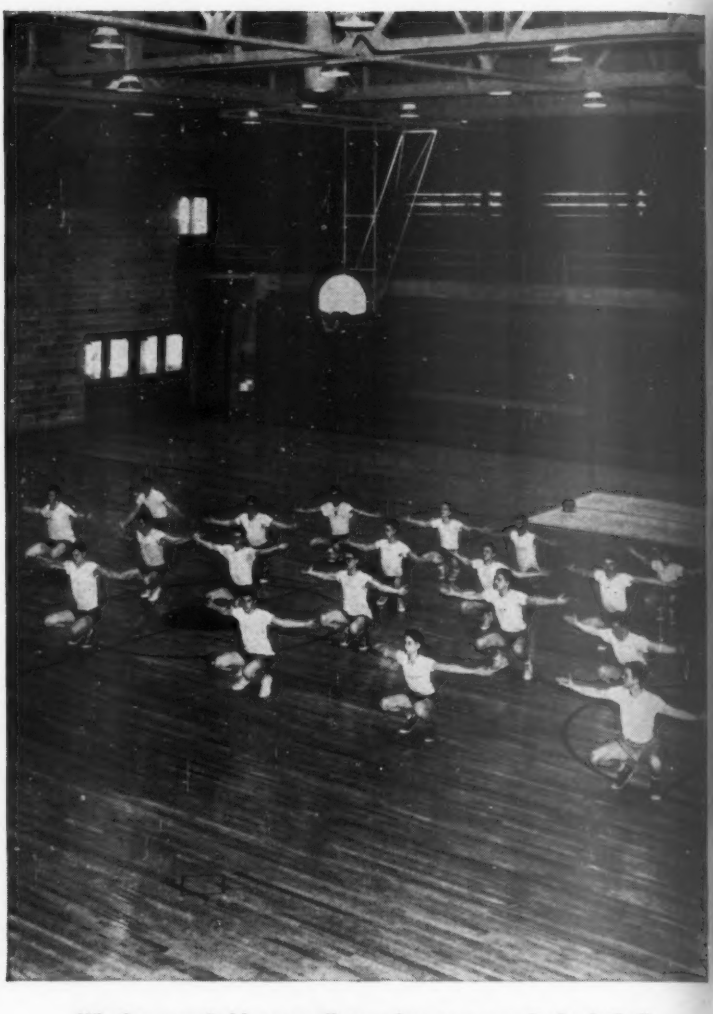
(For more information, see last page)

ASSURE A BETTER THERMAL ENVIRONMENT and *Cut the Cost*



Whether occupied by a small gym class or a capacity basketball crowd, the gym stays comfortably heated and ventilated. Johnson *Dual* Thermostats allow "after hours" use of any room or section without heating the unoccupied rooms.

Up-to-date thinking stresses the importance of a properly controlled thermal environment as an aid to learning. That, of course, calls for an expertly planned temperature control system. At the same time, there is pressure to keep heating expenses down. That, too, is a matter of proper control.

A good example of the way both of these problems are solved by Johnson Pneumatic Temperature Control Systems is found in the impressive West Senior High School, Waterloo, Iowa.

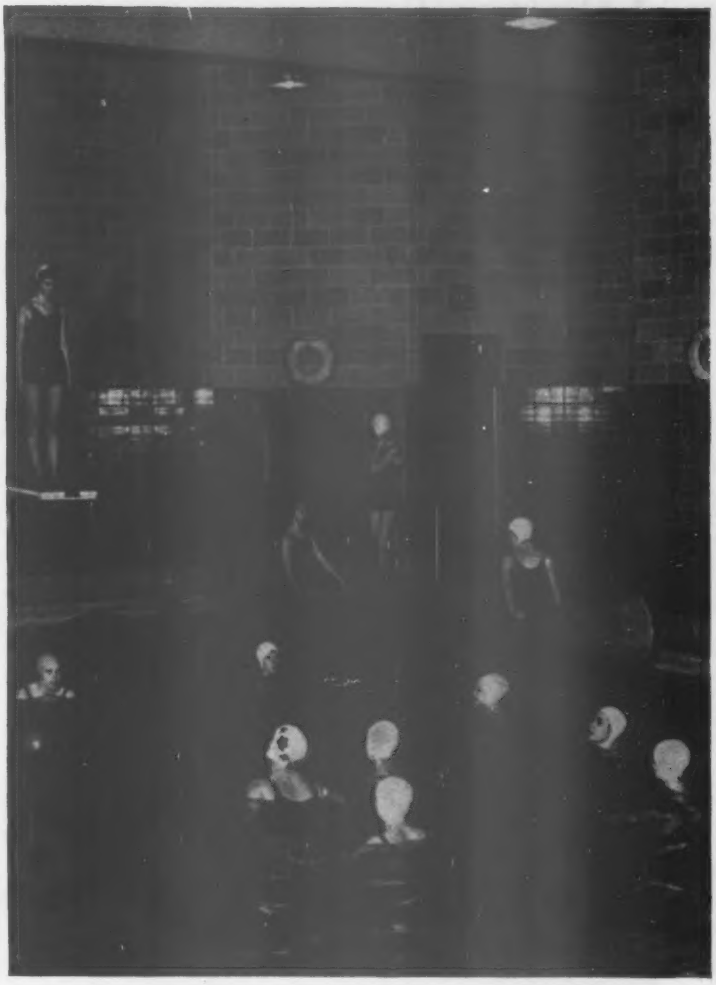
With all rooms individually comfort-controlled by Johnson Thermostats, each of many different comfort demands can be met simultaneously. Each activity takes place under virtually ideal conditions.

At the same time, the Johnson System accurately matches the available heat supply to actual needs and eliminates wasteful overheating. Even more important are the savings in "after hours" heating costs. When classes are over, only the rooms *in use* are heated to normal comfort levels, while low, economy temperatures are maintained in the unoccupied rooms.

At West Senior High, as in countless other modern schools, Johnson Pneumatic Control pays off in lower heating costs . . . systemwide simplicity of operation and upkeep . . . and complete flexibility of control to meet every heating, ventilating and air conditioning requirement.

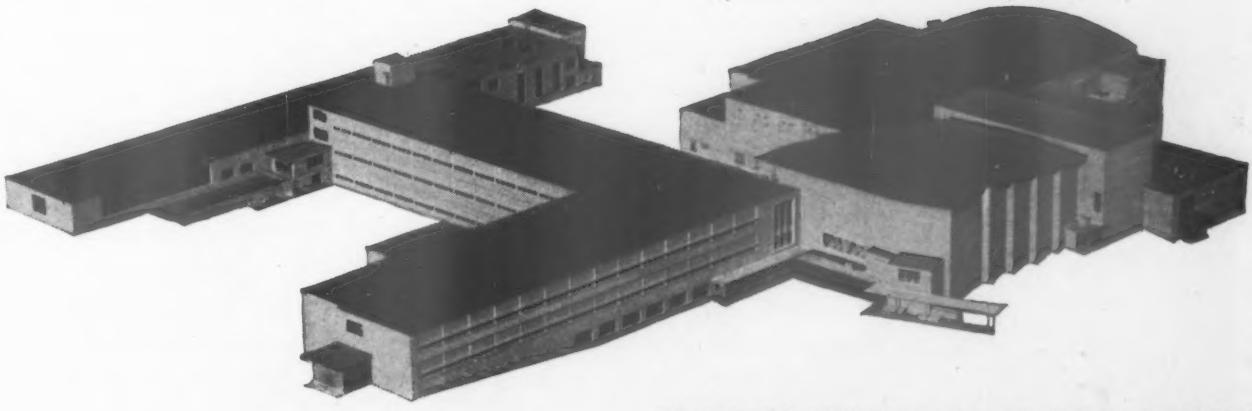
Talk to your architect or engineer about the unmatched comfort and economy advantages of Johnson Pneumatic Control. Or call a nearby Johnson branch office. Johnson Service Company, Milwaukee 1, Wisconsin.

The thermostat on the wall determines the exact heating and ventilating effect needed to maintain ideal conditions for teaching and learning. With Johnson Control, no one has to keep checking classroom temperatures.



Close regulation of heat and ventilation in the pool area is essential for both health and comfort. Johnson Pneumatic Control Systems are applied to all types and makes of air conditioning, heating and ventilating equipment.

# of Comfort



West Senior High School, Waterloo, Iowa. M. B. Cleveland, architect; Todd, Hedeen & Associates, mechanical engineers; Wiles Construction Company, general contractor; all of Waterloo.

JOHNSON CONTROL

PNEUMATIC SYSTEMS

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(For more information, see last page)

PROBLEM SOLVING CLINIC

SCHOOL MANAGEMENT asked this question of a panel of leading architects. Here are their answers including comments on the costs of convertibility and of building schools "in stages".

Can an elementary school be designed for future high school use?

■ ■ ■ A few months ago we sent the following set of facts (based on an actual situation in an eastern suburban school district) to the panel of architects shown on pages 32 and 33. Each was asked to consider the problem and then give us his answer to five key questions.

HOW WE STATED THE PROBLEM

A suburban district has experienced considerable population growth in recent years. They have undertaken a building program which has just managed to keep up with their classroom needs. They have just completed a new population study and forecast, and have resolved their building problem to this extent.

a. *There is an urgent need for more classroom space, to accommodate pupils in kindergarten through sixth grade.*

b. *The present high school facilities are adequate for the present pupil population in grades seven through 12, but when the impact of children now in the primary and elementary school hits, the high school facilities will be too small.*

c. *Though they need more K-6 space now, the school board feels that to build a new elementary school might put it in the position of "overbuilding" in terms of long range elementary classroom needs.*

d. *A member of the board suggests that the district start plans immediately for a new junior-senior high school. He suggests that this structure be built in two stages, but that the plan for the whole project be prepared at the outset. He suggests that the overflow of elementary pupils be housed in "first stage" buildings as soon as they are completed. Then, as the increasing number of elementary students finally hit the high school, the second stage will be ready for them. At this point, the first and second stage structures will be* converted completely *to junior-senior high school use.*

e. *Naturally, all of his suggestions presuppose that the growth of elementary pupils in the future will not overtax the present primary and elementary facilities.*

THE QUESTIONS

Using the above set of facts, we would like to have your firm's opinion and experience in answer to the following questions:

1. *Have you ever designed a "convertible"*

The PROBLEM

today

OVERCROWDED K-6

ADEQUATE H.S.

future

ADEQUATE
K-6

OVERCROWDED
H.S.

The usual SOLUTION

today

BUILD NEW K-6

ADEQUATE H.S.

future

OVERBUILT K-6

BUILD NEW H.S.

The "CONVERTIBLE" SOLUTION

today

K-6 USES CONVERTIBLE SCHOOL

H.S.

future

K-6

CONVERTIBLE SCHOOL USED BY H.S.

One firm built a convertible school. Others had some experience.

WARREN H. ASHLEY
Warren H. Ashley
West Hartford, Conn.

ARTHUR MANN
Daniel, Mann, Johnson and Mendenhall
Los Angeles

JOHN M. ROWLETT
Caudill, Rowlett, Scott and Associates
Oklahoma City

school to be used temporarily by elementary school pupils, finally to be converted to high school use?

2. *Whether or not you have designed such a school, do you feel it can be done economically, and without diluting the educational value of the building?*

3. *Do you believe such a structure could be designed so that ultimate conversion would not require major structural changes or excessive costs.*

4. *Assuming building costs stay constant, do you believe that building in two stages would cost very much more than building the entire junior-senior structure at one time?*

5. *What is your over-all opinion, as a practicing schoolhouse architect, on the general idea of this convertible school?*

Some of the panelists answered each question separately. Others merged their answers in a single over-all response. We have reported below *all* of the answers except when we felt they were so closely similar that repetition served no useful purpose.

THE ANSWERS

QUESTION 1: Have you ever designed a "convertible" school?

Of the six panelists, only one had ever built a school to be used temporarily by elementary school pupils, finally to be converted to high school use. A few other firms had had experience with convertibility, however. Here are their answers:

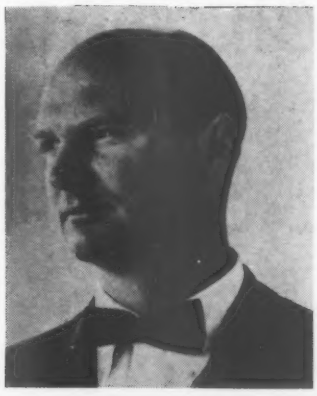
Ketchum and Sharp: "We have designed at least two schools that fit the description. One was to become an extension of a nearby (existing) junior high school if the need arose, but served as a 16-classroom elementary school in the interim. Because of subsequent development, this building still serves as an elementary school.

"The other was originally planned as a 'straddle' school for grades five through eight. Depending on whether the district centralized with an adjoining district thereafter, the school was to become all elementary or all junior high. As events transpired, the school became an all junior high school. A large addition is now being built to make it a junior-senior high school."

Warren H. Ashley: "We have never designed a convertible school *per*

All had opinions. The men who answered and the firms they represent:

FRANK LEE COCHRAN
Perkins and Will
Chicago



J. STANLEY SHARP
Ketchum and Sharp
New York City

NATHANIEL CURTIS, JR. AND ARTHUR Q. DAVIS
Curtis and Davis
New Orleans

se. But our Old Saybrook High School, which is a group of separate buildings, is similar. During the construction of the buildings, the board considered very seriously using one building for elementary pupils, so that it could relieve the double sessions in the elementary school. However, during the course of construction, the members finally changed their minds about it and decided not to accept any of the buildings until they were all complete."

Perkins & Will: "We have not designed a convertible school, but we have done something similar. We designed a building in Chicago which has all 12 grades in it and a "connecting link" in the building which contains classrooms which were specifically designed to be used either by the elementary school children or by high school pupils depending upon the relative loading of the pupil population through the years. Thus, these rooms fit the convertible school description."

QUESTION 2: **Whether or not you have designed such a school, do you feel it can be done economically, without diluting the building's educational value?**

Ketchum and Sharp: "This can be done with only very minor economic and educational penalties, provided that the entire program is anticipated and is a part of a master plan. The really difficult thing is to convert an elementary school to a secondary school without losing the use of the space during the conversion. The kind of construction which most readily accommodates such a change is not the most economical in first cost."

Warren H. Ashley: "I think such a school could be best handled if it was built as a *group* of buildings. It should be designed for its ultimate use (high school) and used temporarily as an elementary school. Laboratories, for example, can be used for other purposes by putting all of the fixed equipment around the perimeter of the room and leaving the interior free for moveable equipment."

Perkins & Will: "Such a school could be designed without diluting educational values if a certain amount of care was taken in the design, and if the *end objective* is kept in mind."

Daniel, Mann, Johnson & Mendenhall: "We believe it could be done economically so far as buildings are concerned. The dilution of the educational value could be opened to some rather severe comment, however, since the requirements for high school are quite different from those of elementary schools. We strive to give more of a home feel-

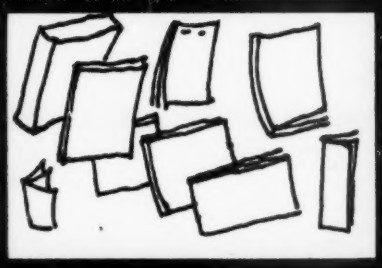
continued on page 78

How schools and business can help each other

THE TULSA PLAN

Industry provides speakers, consultants

Literature is made available to teachers



Students are able to tour local plants

■ ■ ■ Last month SCHOOL MANAGEMENT reported on how schools and business can help each other. Mentioned briefly in this report was the outstanding system now operating in Tulsa, Oklahoma. This month we take a closer look at the Tulsa Plan; what it is, how it started, and where it is going.

Tulsa, Okla., has a population of more than 250,000. It is a 572-sq. mi. area with average community resources. Because of the highly technical nature of its major industry (Tulsa calls itself the oil capital of the world) much of the school curriculum is science oriented. In Hartford, Conn., it might be insurance oriented, in Pittsburgh, Pa., it might be steel. The point is that what has happened—or, rather, what was *made* to happen—in Tulsa, can happen in any town.

The first major instance of professional and school cooperation occurred in Tulsa in 1934 when the Medico Club was formed (*see box, page 38*). Since that time, Tulsa's schools have received many offers of corporate assistance. Some were accepted. Much of the assistance was valuable but, unfortunately, none was coordinated. In the spring of 1957 steps were taken to consolidate and organize the separate efforts of individual companies to bring the greatest possible aid to the largest possible number of high school students and teachers. Here is how it began.

The first step

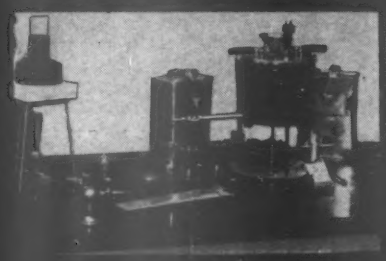
Dr. Charles C. Mason is head of the Tulsa public school system. At his suggestion the education committee of the Tulsa Chamber of Commerce appointed a special subcommittee to make recommendations for coordinating offers of assistance from businesses and other organizations.

Appointed to head this sub-committee was Bert Edwards, an official of the Carter Oil Co. "The first step was to determine what kinds of help the teachers really wanted and could use to best advantage," Edwards says. "We felt it was not for business and industry to say what they *wanted* to do, but for the teachers to indicate what they *needed and would use*."

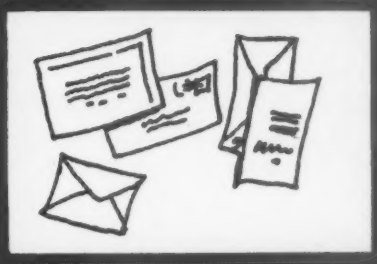
To activate this policy a survey was made and teachers indicated what kinds of help they wanted. Business and industrial firms were furnished with the list of help required and asked for definite commitments. Response was excellent. Under the leadership and guidance of Dr. Morgan L. Powell, director of school-community relations, this is what has happened in less than one year.

Tulsa's schools are receiving extensive, well coordinated help from local business when and where they need it. Here is the way Tulsa's schools and businesses have worked together to improve that city's educational offering.

Scientific equipment is donated to the schools



Teachers are invited to professional meetings



Industry hires teachers during the summer

The teachers wanted:

Industrial personnel to speak to classes on class topics; to conduct individual guidance conferences; to demonstrate processes and scientific principles; to act as student club sponsors, and to sponsor special class or individual projects.

They got:

► Industrial specialists were made available to students. For example: Alvin C. Turner of Southwestern Bell Telephone spoke to a science class on "Magnetic Relays." B. W. Berthelot of Phillips Petroleum spoke to an advanced physical science class on "Water Flooding and Secondary Recovery." Dr. Al Kidwell, geologist for Carter Oil Co., spoke to a class on "Geo-Chemistry."

These are only a few of many examples where industry has furnished top-ranking speakers. These men were invited to lecture on their particular subjects in order to supplement the regular school textbook and laboratory work done by the students in these areas.

► Other specialists were invited to speak for a different reason. Under an aid-to-education project carried out by the youth groups division of the Chamber of Commerce Petroleum Information Committee, some 1700 high school chemistry and physics students submitted lecture topic suggestions to their teachers. Here are some of the lectures that were given as a result:

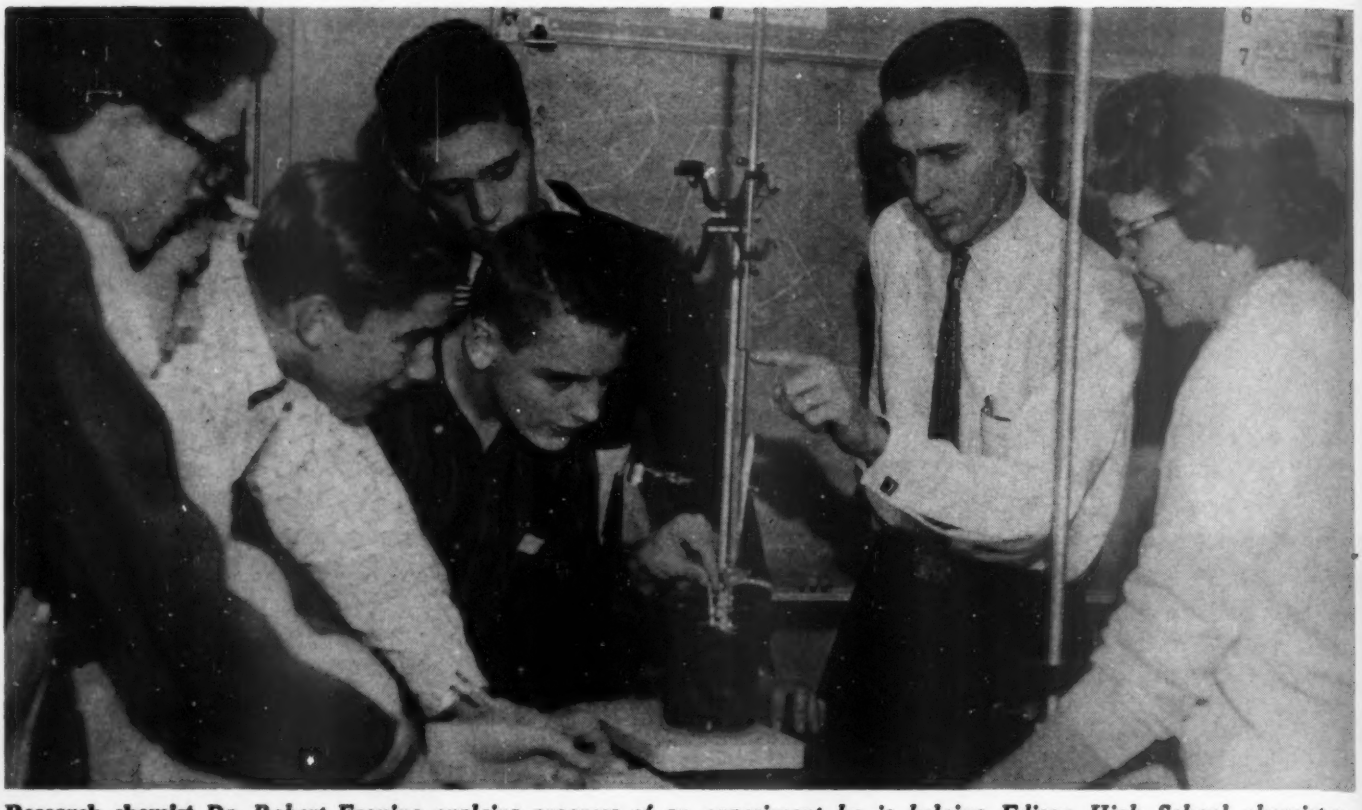
Paul L. Lyons, Sinclair Oil and Gas Co., *"Implications of the Geophysical Year."*

H. F. Bell, The Texas Co., *"Petro-Chemicals and Their Future."*

Dr. J. Homer Jones, Pan American Petroleum Corp., *"Our Energy Sources."*

B. V. Prather, D-X Sunray Oil Co., *"Science Careers."*

These men, among others, spoke



Research chemist *Dr. Robert Froning explains progress of an experiment he is helping Edison High School chemistry students undertake. Dr. Froning was invited to work with the class by Mrs. Katherine Jones (right), the classroom teacher.*

to 1700 students at the Central high school. All of the lecturers allowed time for lengthy question-and-answer sessions at the close of the prepared speeches.

A great deal of work with clubs, individual guidance conferences and special projects, was handled through the Thirty Hour Club (*see box, page 75).* This group of Tulsa scientists and related professionals agreed to donate a total of 30 hours of time per man to participation in aid-to-education programs each year.

The teachers wanted:

Technical literature, bulletins and magazines when they were no longer needed by business firms.

They got:

►Today the Tulsa schools are receiving regularly technical literature from four major companies: Carter Oil Co., Pan American Petroleum Corp., Gulf Oil Co., and Sinclair Oil and Gas Co. Approximately 300 technical publications are being received from these four companies each month. This is in addition to many pieces of literature that come in unscheduled from other sources.

As an example of how this material is scheduled, this is the procedure followed by Carter Oil Co.:

Dr. W. A. Bruce, assistant chief of research for Carter, has instructed all employees to send their publications to the company library when they are finished with them. The librarian there sorts the material and sends all duplicates, via company truck, to the science office at the Education Service Center. The supervisor of science then divides the material and sends it by school truck to the five senior high schools.

►A few of the publications now being received are: *Petroleum Engineer, Machine Design, Petroleum Refinery, Pipeline News, Chemical Engineering Progress, Mechanical Engineering, Consulting Engineer, Oil and Gas Journal, Petroleum Week, and Construction Methods and Equipment.*

The teachers wanted:

Invitations to be issued to teachers and selected students to attend certain professional meetings when topics to be discussed were of special interest.

They got:

► Invitations to attend the monthly meetings of the Tulsa Chapter of the American Chemical Society, and the Tulsa Geophysical Society.

► Five Tulsa science teachers were invited to attend the Atoms for Peace exhibit held in Oklahoma City last summer.

►A special program was arranged by the Chamber of Commerce's water resources and area contact committees for Tulsa's secondary science teachers. The meeting was held at Will Rogers high school, with several of Tulsa's civic leaders appearing on the program. Purpose of the meeting was to provide current information on Tulsa's and eastern Oklahoma's present water supplies and potential water resources, for presentation before student groups.

► Twenty science teachers were invited to attend the three-day Massachusetts Institute of Technology conference held in Tulsa. Nine MIT faculty representatives and a number of nationally known scientists attended the conference. MIT alumni in Tulsa, either individually or through their company affiliations, paid the $15 per teacher fee required for conference attendance. They also provided tickets for 150 selected high school students to attend some conference sessions.

The teachers wanted:

Tours of laboratories and processing and manufacturing plants with follow-up discussions on what was observed.

They got:

► Dozens of companies in Tulsa agreed to open their facilities to supervised student tours, and to provide their own qualified men to conduct the tours and explain the processes observed.

Briefly, here is how a tour is set up:

Students, working with the teacher, make an outline of the things they need to see, depending upon their particular topic of study. Then a request is made, usually to the public relations director of the company, for a tour which would show the things in which the students are interested. The public relations director then plans the tour within his own organization and works out with the class the details of time and transportation. Company employees conduct the students through the buildings, explaining various processes as they are seen. A brief explanation of what they will see often precedes the actual tour and a short resume of what has been seen sometimes follows it. A typical tour lasts from three to three and one-half hours.

► Among the favorites on the list of tours are these: Carter Oil Co. Research Laboratory, Douglas Aircraft, Dowell Inc., D-X Sunray refinery, Texas Co. refinery, Seismograph Service, Oklahoma Steel Castings, Southwestern Bell Telephone Co., Pan American Petroleum Corp. research laboratory, Tulsa City Water Plant, and the Ozark Mahoning sulphuric plant.

Business education students regularly visit the First National Bank and the National Bank of Tulsa.

continued on next page

TOURS

The teachers wanted:

Scientific equipment to be donated by companies.

They got:

► Response from Tulsa companies was prompt and extensive. Among the items already received are:

► Five Geiger counters and pistol grip scintillator, donated by the Sears Foundation through the local Sears, Roebuck & Co. store, and 3,000 mica condensers donated by Pan American Petroleum Corp. A viscosimeter and accessories, carbon residue tester, a cloud and pour apparatus, flash point tester with accessories, and a Log Log Duplex Victor Hyperbolic slide rule, all purchased with money donated by Dowell, Inc. Several companies have donated films and filmstrips, and have also placed on temporary loan various pieces of equipment needed for conducting particular experiments.

The teachers wanted:

Summer employment in areas related to their teaching fields.

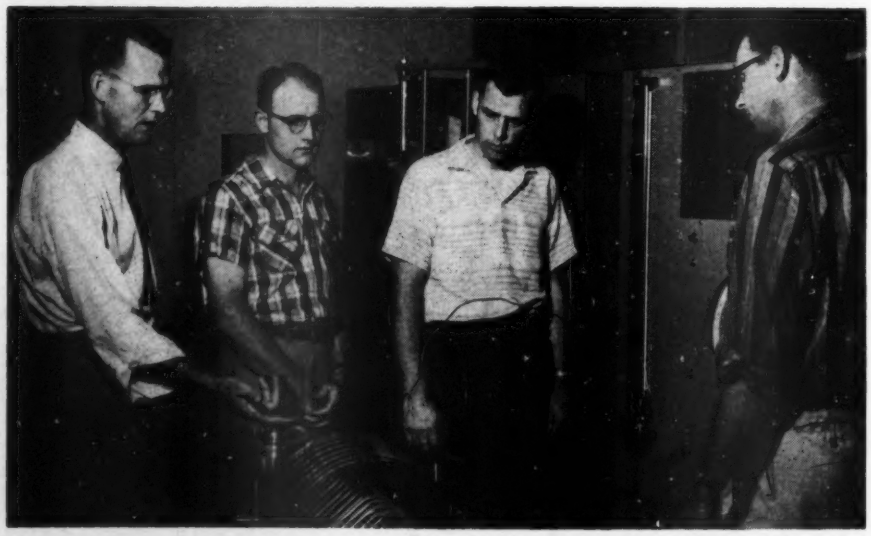
They got:

► During the one summer since Tulsa's plan began operating, some 15 teachers worked for local industry. The Pan American Petroleum Corp. hired both men and women in the exploration, production, process and patent divisions of their research department. Dowell Inc. and Carter Oil are among other local concerns that have hired teachers during the summer vacation period.

Harold McCord, physics teacher at Tulsa's Rogers high school, has

continued on page 75

SUMMER EMPLOYMENT



Three Tulsa teachers *who worked in industrial production research section during the summer, discuss operation of test equipment with a company technician.*

THE MEDICO CLUB

In 1934 the first professional aid to students was initiated in Tulsa. Now in its 23rd year of operation, the Medico Club operates in Central High School, under the counseling of science teacher Aubrey Baer, and with the Tulsa Medical Society acting as "big brother." The club currently has 60 members who plan careers in medicine, dentistry or nursing.

Seven prominent doctors have spoken to the club so far this school year. Speakers and their topics have included:

Dr. Walter Brown—Radiology
Dr. Vance Lucas—Chest Surgery
Dr. Harold Lehevine—Atomic Medicine and the Isotope
Dr. Harold A. White—General Surgery
Dr. Milford S. Ungerman—Role of the Psychiatrist in Mental and Emotional Illness
Dr. John C. Kramer—Diseases of Children
Dr. Eugene S. Cohen—A demonstration of a number of diagnostic instruments and apparatus.

In addition to such lectures, club members make regular tours of Tulsa's hospitals and clinics. Activities such as these, added to the lectures given by leading local doctors, with the opportunity to ask them searching questions, gives Medico Club members an unparalleled opportunity to get a look behind the scenes and discover for themselves what a career in medicine, dentistry or nursing really means. A lot of the pseudo-glamor is rubbed off and the real import of medical service is emphasized.

What's right . . . and what's wrong with present day

SCHOOLHOUSE DESIGN

Here are results of a study of 325 elementary schools built in the post-war decade. Observations are based on the experiences of educators who have "lived with" the design features described.

By DR. PAUL PHILLIPS

Early in 1955, while reviewing a number of new schoolhouse plans, Dr. Paul Phillips noticed striking similarities in their design, although the architecture on each of these schools was different, and the schools were in widely separated sections of the country. It was apparent that certain practices were being imitated or adapted as a result of heavy publicity or internal pressure on the architects involved.

Some of these innovations were based upon results of scientific investigations. Others represented the opinions of enthusiastic educators and architects. It was apparent, however, that many of these new features had been widely copied without assurance that they adequately met the needs for which they were designed.

Dr. Phillips decided to conduct an investigation into the many facts of school construction that appeared to be most heavily duplicated from district to district in an effort to determine which were proving successful in actual practice.

In the belief that the one best method to obtain this data was to go into the field and question the schoolmen who were using these design features, Phillips selected a number of schools which were thought to be outstanding by two or more educational or architectural journals, and made plans to visit them.

Prior to the school visits, a questionnaire was constructed which covered most of the innovations used in new school construction. This information was obtained from professional journals, recommendations from well-known architects, and other experts in the field. With the questionnaire serving as a guide for obtaining information, visits were made to 39 cities in various sections of the United States. The data gained from this field trip was used to construct a more inclusive questionnaire which was sent to 746 new elementary schools throughout the United States, all of which were thought to be outstanding by one or more professional journals.

Replies were received from 325 elementary schools built in the 10 years following the end of World War II, with every state in the nation represented by at least one school. It is from the questionnaire responses and oral information gained from the field trip that this report was constructed.

We believe this study to be unique in that it has removed, insofar as possible, the element of personal bias in reaching its conclusions. It summarizes what practicing schoolmen have actually *learned* when teachers and children were obliged to use the innovations or ideas that looked good on paper.

Here, in this first of two articles, are some mandates from practicing educators on what they do and don't like about the way their schools were constructed, or the way they were planned. All of the points described in the following article were agreed upon by an overwhelming majority of those answering the questionnaire. *(Please turn page.)*

1 *Get community understanding in the planning stages.*

Lay persons interested in the schools often fail to realize that a building should be tailored to fit the desired educational program. Whenever this problem occurs, *the fault must lie with the educators* who have failed to speak up for their needs program-wise.

By the same token, throughout the country communities have voted large sums of money for the construction of new school buildings, and in many instances the lay public has not been invited to help in planning. Only 60% of the responding schools said the public had participated. Yet in those communities where joint planning of the school building has taken place, *only one found the experience unsatisfactory*. If educators were to organize in-service programs for the lay person, with the express purpose of relating construction to the kind of educational program desired, dissatisfaction with school construction might disappear completely, being replaced by an understanding of school needs. This would help practicing educators by removing from their shoulders the necessity for defending their school plants against uninformed attacks.

The importance of teachers in planning new school buildings must not be underestimated either. These people work in the classrooms and their judgment is invaluable in planning the many details necessary in classroom construction. In fact, in a few districts children were asked their opinions, and reports indicate that even this procedure was frequently productive.

2 *Purchase an adequate site*

A site is generally considered to be adequate when it has a minimum of five acres plus an additional acre for each 100 pupils of ultimate enrollment. There is very little doubt in analyzing answers to the survey that *anything less than five acres is very unsatisfactory*. Most schools indicated their sites to be from six to 14 acres, and this amount met the needs of the majority of school districts. However, many districts failed to take into consideration future growth and now find they lack adequate acreage unless they condemn nearby populated areas. And even this solution is not always available—45% of the schools, when asked, reported no adjacent land available!

With land costs at an all time high it has been suggested that school boards and park boards combine their resources to purchase property and plan community playgrounds. This has created difficulties of various types, however, and the survey results indicate there is a tendency away from this type of planning. As it was with lay participation in the planning of school buildings, it seems that a firm and realistic approach is lacking. The main objection among educators has been fear of damage to property when the school is used for other than education. Yet 92% of the schools responding said "no" when asked if an excessive amount of damage was experienced when the community used school facilities. Most of the schools that did participate in cooperative playground planning, were very satisfied with the results.

3 *Basements: Useful, but not for classrooms*

About half of the schools responding indicated they had full or partial basements. The great majority of those with full basements (94%), expressed satisfaction with them. They indicated that aside from boiler space, they could be used for many other functions, including playrooms, craft rooms, storage, community activities, and even, in one school, to house a community museum.

Several schools without basements expressed the wish that they were available, one saying it would now be used for shower and lockers if one had been constructed under the gymnasium.

The only caution, expressed by many schools, was that there is a tendency to use the basement space for classrooms when regular rooms become overcrowded. This was found to be undesirable. Basements, the educators concluded, are helpful if used for the purposes for which they were constructed.

4 *Build special rooms*

The post war years have increased the demands placed upon the elementary school building. Communities have indicated their desire to use school facilities after hours. There is greater interest in making the work and leisure hours of the teachers more enjoyable. And, most important, the changing curriculum of the elementary schools has demanded that children participate in many new types of activities. To obtain the maximum benefits of these activities, special rooms are required.

Special rooms can be divided into two categories. The first would include rooms built for a single purpose—auditoriums, gymnasiums, cafeterias, teacher work rooms, visual-aid rooms, etc. The second includes what has come to be called "multi-purpose" rooms. In this category would fall such combinations as auditorium-gymnasiums, cafeteria-teacher rooms, etc.

Among schools that constructed *separate* special rooms, four facilities got the most attention. More than one-third of the schools constructed separate cafeterias. Three-fourths of these indicated that other activities, such as community functions, were held in this area.

Auditoriums were constructed by approximately one-third of the schools, every one of which indicated that its school use alone justified its construction. An additional 82% said that the community

also made wide use of the facility. Many schools employed the auditorium for extensive use of audio-visual material.

Slightly less than one-third of the schools had separate gymnasium facilities. Of these, 85% felt that they were justified. Almost all of the gymnasiums had outside exits and community use of the facility was high.

Many of the elementary schools with separate gymnasiums did not provide seating facilities for spectators, this being a way of reducing costs. At the same time, shower facilities were constructed in most, with mixed reactions. *It was generally felt that in an elementary school showers were not used enough to warrant the expense.*

Teacher rooms have ranged from elaborate areas with kitchens, smoking and non-smoking rooms and lounge areas, to a single room put aside for teacher use with a desk or table and chairs as the only furniture.

Generally, schools found these rooms a necessity, though there was considerable doubt about the need for a special smoking room and the more elaborate facilities were not particularly attractive to the majority.

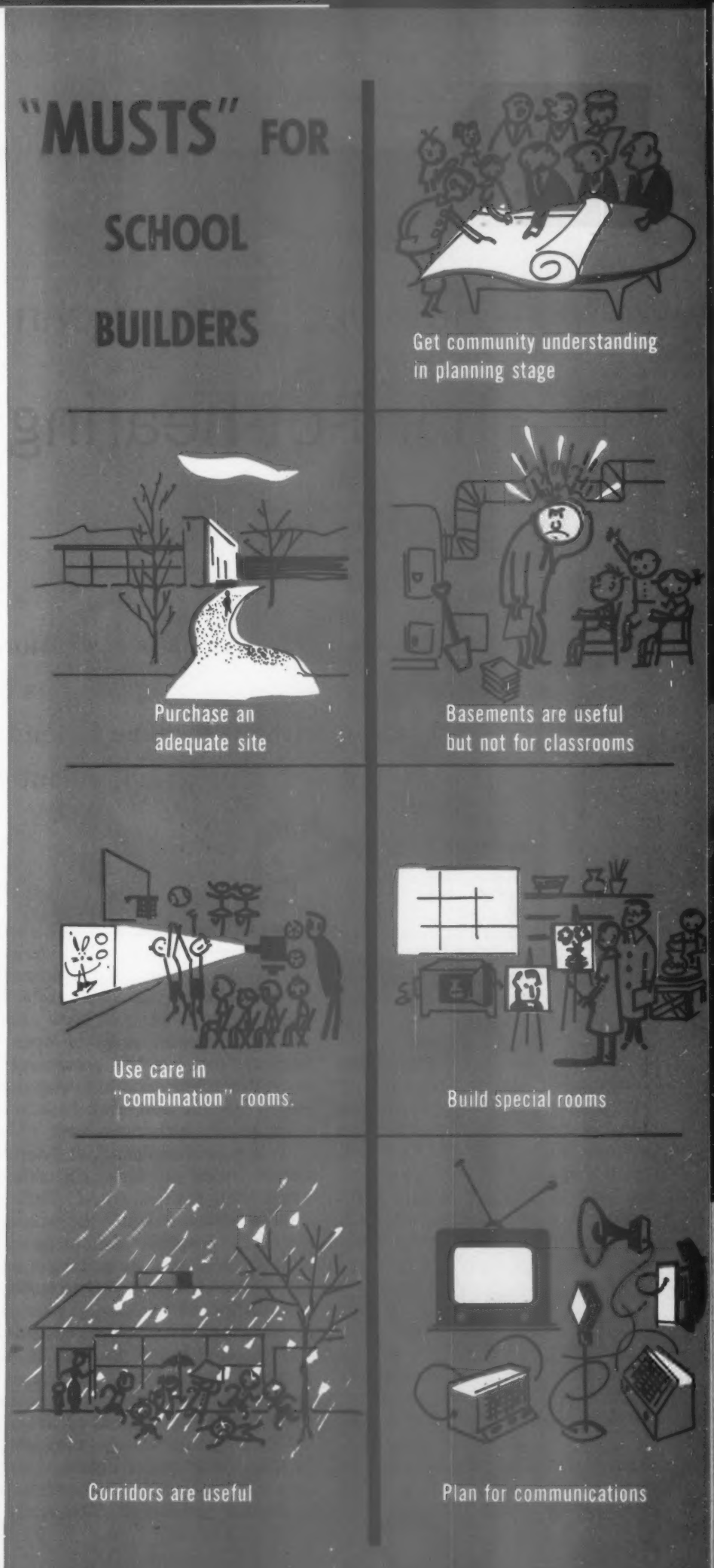
Other special rooms that have been constructed in many schools include central libraries, parents' rooms, and custodian's rooms. Those schools that had these facilities said they were extremely useful.

5 *Use care in constructing "combination" rooms*

Indications from the survey are that educators are satisfied with multi-purpose rooms, (93% said advantages outweigh disadvantages), but that there are many problems that have not been solved. If money is available, they would prefer to see *separate* special rooms constructed.

A total of 71.1% of the respondents had constructed multi-

continued on page 70


"MUSTS" FOR SCHOOL BUILDERS
Get community understanding in planning stage
Purchase an adequate site
Basements are useful but not for classrooms
Use care in "combination" rooms.
Build special rooms
Corridors are useful
Plan for communications

How your district can help hard-of-hearing children at very low cost

In less than three years of operation, the Park Forest, Ill. hearing conservation program has helped scores of children who might, without it, have fallen behind in school. The cost of such a program? About 40 cents per pupil.

■ ■ ■ Three years ago, when Park Forest, Ill., was considering a "hearing conservation" program for its schools, the main obstacle was thought to be cost. Now after two and one-half years of operation, the program has proven successful in helping children with impaired hearing and may have actually saved the district money.

Says Superintendent Z. J. Sykuta, "the detection of hearing difficulties along with notification of parents involved, has allowed the school district to give the children the extra help they need in meeting their problem successfully. Through this extra help children are prevented from becoming classroom problems. The effect on the teaching staff through this reduction of classroom problems is extremely important in terms of staff morale and efficiency.

"Hearing loss," he pointed out, "is difficult to detect unless a systematic programming of auditory testing is conducted. Frequently, problems attributable to hearing loss are blamed on other causes when the loss remains undetected."

Park Forest's program for detecting hard-of-hearing children, was established in 1955. Under the program, the primary 1, primary 3, 5th and 7th grades are tested each year. In this manner the entire school population is tested every two years. The testing program is directed by Mrs. Emily Wechsberg, supervising public health nurse, who received special instruction in the use of an audiometer.

The audiometer is able to transmit pure sound to a student wearing earphones. Mrs. Wechsberg sits on one side of the machine, facing an instrument panel which indicates how much sound (intensity measured in decibels) at what frequency (pitch measured in cycles per second) is being transmitted.

The child makes an indication each time he hears a sound. These indications are noted by Mrs.

Wechsberg, establishing the child's range of hearing.

The hearing tests are carried out as a part of the total health screening program conducted at the beginning of each school year. Assistance is given Mrs. Wechsberg by members of her staff, along with volunteer help from the schools' PTA's.

During the 1957-58 school year, 2,129 pupils were tested for hearing. One hundred and eighty-nine were re-tested and, of this number, 33 were referred for medical attention (National studies indicate that one out of 10 students have some hearing loss). The program is conducted in a quiet room or hallway in the school building attended by the children tested. All re-tests are made in the nurse's office.

Where a loss is indicated, a complete "threshold test" is made to discover the precise point at which it occurs. Where referral for medical attention is necessary, parents are notified. When requested the child's audiogram is made available to a private doctor. Children with a hearing loss of 35 decibels or more receive special instruction in a hard-of-hearing class.

The amount of time spent in the hard-of-hearing class is determined by the child's achievement and habilitation. The child attends this class a part of the day learning special skills—speech, speech reading, vocabulary building, language and auditory training. The rest of the day is spent in normal school activities. Where necessary, special attention is given to the academic areas to bring the child up to a par with the class group.

Benefits gratifying

The benefits derived from this type of investigation and programming are gratifying. Help can be given when and where it is necessary. Children who could have become lost in the regular programs are aided before they become involved in serious learning problems. Confidence and self-sufficiency is developed in an individual who might, without the advantage of special consideration, contribute little to the success of his own life as well as to others.

"Raise your hand *just as soon as you hear a sound," is the instruction this girl has received. The nurse checks the frequency and intensity rating at that point and notes it on her audiogram.*

Certainly if measured in human values, no hearing conservation program is "too expensive." Unfortunately, school boards today must make their measurements not only in those terms but in hard cash.

Even so, according to one major manufacturer of hearing equipment, a hearing conservation program can be set up in any school district at a minimum expense. Ellis Singer, clinical audiologist for Beltone Hearing Aid Co., estimates that a hearing program could be set up for a school at a cost of $295 plus the salary of the person doing the work and miscellaneous charges for forms, electricity and record-keeping.

Since the machine could be used many years, its cost should not be considered in a single year's budget.

The $295 audiometer would enable a district to test each child individually for hearing loss at a rate of approximately 100 students per day. Mr. Singer estimates that an audiometer operator could come into a classroom, spend 10 minutes explaining the way the test is to be taken, and then test each child individually at the rate of a student every 60 seconds.

Since the success of the tests depends in part on the alertness of the operator, he suggests that no one person attempt more than 100 tests per day. Nevertheless, under this schedule, as many as 2,000 children could be tested by a single person with a single machine in the first month of school.

Since the machine is light enough to be portable, the operator could

continued on page 77

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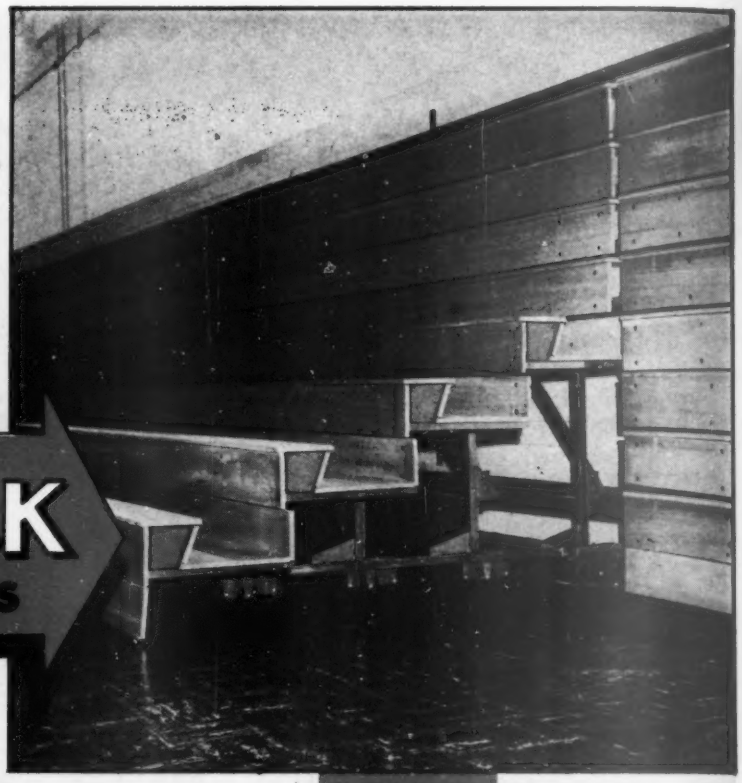

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Principal's letter brings wide reaction

A letter from a Portland, Ore., school principal to the parents of his students has brought a wide and favorable response. The letter, from Kenneth A. Erickson, principal of Franklin High School, reminded parents that the students' high school record begins at home. Principal Erickson offered the parents some practical advice on helping their children.

Noting that Russia's Sputnik is affecting the classrooms, Erickson told the parents that it must also affect the nation's homes.

"Parents can do something today to help the educational level of our nation," he wrote. He presented five points for parents of students to bear in mind. His points were:

1. A good high school education cannot be acquired during school hours only. Parents should look to their children's home work assignments. "If your child seldom or never brings school work home, contact your child's counselor or principal and ask about the situation."

2. Provide a good place in the home for study without distractions. "No students should be expected or allowed to study in a room during television programs."

3. Parents should study the report cards sent home six times a year, and should see the classroom teacher, the counselor or the principal if they are concerned about their child's progress.

"If parents are uncertain as to the quality of work to expect . . . an appointment should be made with the pupil's counselor or principal to understand better the pupil's academic ability."

4. Parents should "regulate the number of social and other evening activities that crowd out or eliminate time for home work." Parents who feel that school activities demand too many nights out should take their complaint to the school principal. Parent-teacher associations are in a good position to study this situation and take action.

5. Finally, parental attitudes have much to do with the child's getting to school on time and attending regularly. Also it is the responsibility of the parents to see that the child is in physical condition to profit from class work.

"Pupils who fail to get adequate rest each night are too sleepy during classes to accomplish much."

Training areas cut driver education costs

It costs more than three times as much to teach a student how to drive on city streets than it does in a training area. This is the conclusion of Detroit school officials who have just completed their first year under Michigan's driver education law.

Nearly 9,000 students received driver training during the year at an average cost of $22. However the average per pupil cost for students learning in training areas was just $17.63. For a student trained on the city streets, the cost was $60.04.

The explanation of the difference lies in the fact that fewer students can be handled by instructors in on-the-street driving, according to Superintendent Samuel Brownell. Instructor salaries account for 92% of the program's over-all costs.

Real estate expert saves site money

Milwaukee's school system has spent more than $2 million in the last six years on sites for schools but due to the work of a real estate expert in its employ the system has gotten a good price on every one of its purchases.

W. J. Walt has been working for the school board for 33 years. Using his knowledge of real estate he has succeeded in buying property before it became expensive and in anticipating the needs of the school district.

Typical of the transactions performed by Walt was the purchase of a 15½ acre site several years ago. Although the board was never able to use the site itself, through a series of deals it was able to sell it at a good price, get a useable one in its place and make a cash profit.

In another case Walt recommended purchasing a site which was bigger than the board needed. In a short time he was able to sell the extra property at a substantial profit. Property in the area was selling at almost $2,000 an acre. As a result of his deals the school got its land for $800.

Because of Walt's ability to sense the best times for buying and selling, the district has been able to keep ahead of the land boom and cut its site costs way down. At the present time it owns considerable property that might eventually be used for schools—or that might be sold at some future date at a profit.

Plan allows high school graduation at 15

The board of education at Fort Lee, N. J., has adopted a new curriculum plan which will enable advanced students to complete high school by the age of 15.

As explained by Superintendent Lewis Cole, the new program will be all-inclusive, geared to the needs of the art as well as the science student, and will begin in elementary school.

Under the plan, which goes into effect next year, advanced children will be screened by means of extensive testing by a guidance service and by the full-time school psychologist already in the school system.

Adequately qualified children will be accelerated, Cole said, so as to permit them to complete elementary school in five years and high school in three.

A student accelerated under the school at 15 could receive a baccalaureate degree at 19 and a Ph.D. by the age of 22.

Students will not be required to go to summer school in order to keep up with the accelerated program, Cole said, but the high school day will be extended by 50 minutes for these advanced students.

Although the program is designed primarily for those students who plan to go on to college, Cole emphasized that it is open to others as well.

He also noted that the program will be open to those high school students who may want to take an expanded program without accelerating. **End**

How to set up a FIRE PREVENTION

The author, who in previous articles has explored the kinds of insurance to buy and the best way to buy them, now tackles the most pressing problem—how to set up a program that will eliminate fire loss.

■ ■ ■ Proper fire-prevention programs are of major concern to every school official. With modern methods of rapid communication, well-equipped fire departments and tight construction codes, there is a tendency to believe that schools are safe from the hazards of fire. This is a dangerous illusion.

Although school fires involving loss of life have greatly declined in recent years, the National Fire Protection Association reports that in Canada and the United States an average of seven schools a day suffer fire loss.

Fire prevention is a dual responsibility shared by both the district and the community. The attitude: "Don't worry, we're covered by insurance!" has no place in a school district. The fallaciousness of this type of thinking is apparent from several standpoints. First, the insurance in effect in no way directly protects the lives of the occupants of the buildings. Second, the insurance in effect will not regain time lost should the destroyed buildings have to be reconstructed. Third, when preventable insured losses occur, insurance companies must take this into consideration in an upward revision of premium rates.

On the other hand, if every possible precaution is taken to prevent fire, the result will be not only less fire loss but lower insurance premiums, too.

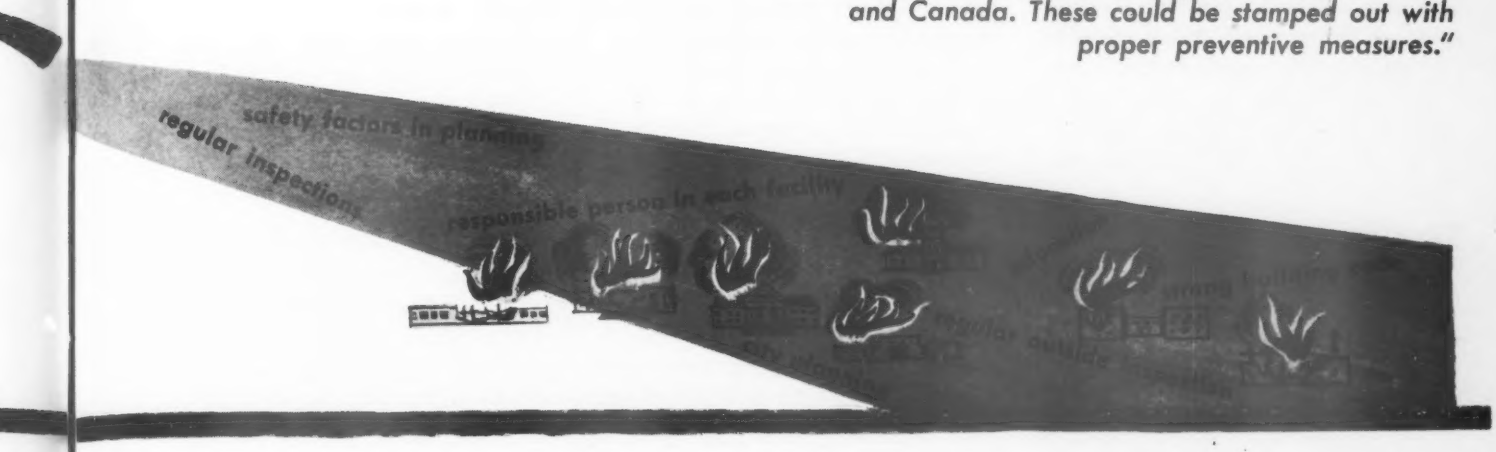
Kinds of fire protection

Fire protection can be categorized into three major types: 1) true prevention, 2) protection, or quasi-preventive acts, and 3) minimizing losses. Note that prevention and protection are not synonymous.

True prevention. True prevention does not consist of any series of specific acts or overt techniques of preventing fires. It consists, rather, of basic attitudes concerning the dangers of fire and a willingness to take all steps necessary to eliminate the possibility. This attitude is usually manifested by the adoption of a good strong building code, one that is developed with the intent of eliminating all fire hazards that are humanly possible to conquer. In addition to adopting a safe building code, for true prevention stringent inspection on a continuing basis is necessary.

Good city planning and layout is another aspect of true prevention. Through careful planning the community minimizes risks from exposure. The effort is made (1) to prevent the start of a fire, and (2) to plan so that if a fire begins, it can be contained with minimum loss.

"Seven school fires occur each day in the United States and Canada. These could be stamped out with proper preventive measures."



PROGRAM

By DR. PAUL SALMON

The school district can lay the basis for a true prevention program by observing good safety features when buildings are in the planning stage; submitting plans to a rating jurisdiction for analysis and rating; carefully conducting regularly structured inspection programs; and planning educational programs at all grade levels. As a part of this program of prevention through education, an official should be assigned in each school facility with definite responsibility to eliminate hazardous conditions created by the carelessness of others.

In this connection, the National Board of Fire Underwriters has suggested that this function should logically be performed by the custodian and a faculty member. The custodian generally is in all parts of the building as he makes his daily rounds. The inclusion of a faculty member on the inspection team is important too, for this action develops a clear channel of communication between the custodian (who is charged with the responsibility for the operation of the school) and the instructional staff (which has the responsibility of teaching fire prevention to students). Ideally each member of the instructional staff, as well as all students, will become personally involved in the fire prevention program.

In order to supplement the efforts of local inspectors, the National Board of Fire Underwriters and the Association of School Business Officials also suggest that this local team be supplemented on a quarterly basis, by a member of the local fire department and a representative from the central office of the school district. This is important because many times the local inspectors become used to a hazardous condition and overlook it.

Protection. The second category of fire prevention is concerned with the protection of things or persons subject to damage if a fire begins and gains headway.

The community discharges its responsibility for proper fire protection practices by the maintenance of adequate fire and police departments, which enforce building and fire laws.

School districts must maintain fire protection equipment and should establish watchmen in hazardous areas. They may carry on an educational and in-service program which alerts all district personnel to the possibilities of fire, and what to do when one occurs.

Minimizing losses. The third category deals with the control of fires once they have started. Its concern is with containing fires as quickly as possible. The community's responsibility lies in having an adequately trained fire department which can respond to a call in the shortest possible time, and in having available adequate supplies of equipment.

School districts must install automatic sprinkler systems and other protective devices which are actuated after a fire starts.

In addition to these devices, the maintenance of adequate fire drill procedures is an important part of the district's participation in this category. It is important that fire drills be conducted under realistic conditions, with students and faculty members trained to vacate buildings in an orderly manner.

Personnel should be expected to think quickly under pressure. For example, in practice sessions, after classes have learned a given route for vacating their classrooms, that route should be blocked from time to time so that an alternate has to be

found. Only by developing resourcefulness and flexibility can lives be protected in an emergency.

Another responsibility of the district in the area of minimizing loss is the protection of property which has been removed from fire-threatened buildings, and the protection of buildings left standing after a loss has occurred. This is a matter which should be included in the development of a check list form for use in case of fire loss.

District programs

In connection with the survey of fire insurance practices, school districts were asked what type of fire inspection program they carried on; whether responsibilities for fire prevention programs were formally delegated to a specific person or agency, how often buildings were inspected, and what type of self-inspection blanks, if any, were being used. Responses showed that 77% of the districts did conduct regular inspections, and 23% did not. Those districts which reported that they did maintain regular programs of fire prevention were asked whether in making their periodic check-ups, they made use of a self-inspection blank. (An excellent one has been officially adopted by the National Board of Fire Underwriters and the Association of School Business Officials.)

About one-half of the respondents reported that they did make use of some sort of check list in making their inspection, and of these 60% made use of the blank issued by the fire underwriters.

Certain principles accepted by the National Board of Fire Underwriters as essential to an adequate inspection program are inherent in the self-inspection blank. This blank requires that the district maintain (1) a monthly inspection by a local school inspection team; and (2) a quarterly inspection, with a member of the fire department.

Only 18% of the responding districts conducted regular inspections on a monthly basis. Another 46% inspected on an annual basis. The remainder reported that inspections were held once a year or less.

The inspecting official on the local team was based at the building or plant under inspection in 8% of the districts. The most common base for personnel conducting building inspections was the central administration office of the district. Approximately half of the districts assigned responsibility in this way. Fire departments did the inspecting for 21% of them and 8% used the local insurance agency. The remaining districts used a combination.

Respondents were asked whether, in their districts, an in-service training program was conducted for the persons who were on the inspection teams. Only 20% of the districts conduct such a program; 80% have no in-service training program for members of these teams.

Expert opinion

The panel of experts was unanimous in its opinion that school districts should plan inspection on a regular basis. They felt that any of four different persons could perform the fire inspection function: (1) personnel assigned to the site as a regular base of operations; (2) personnel from the central office; (3) representatives from the insurance industry; (4) government officials, such as fire department or fire marshal personnel. It is interesting to note here that the panel did not feel as strongly as did the Association of School Business Officials or the National Board of Fire Underwriters that personnel on the location inspection team should be based on the site they inspect.

As to the frequency of inspections, the panel members felt that any of the following frequencies would be desirable: daily, weekly, monthly, quarterly, or every four months. An interval in excess of four months was judged by the specialists to be too long. Monthly or quarterly inspections, it was believed by all panelists, were the most desirable. Several of the panelists indicated that weekly and daily inspections were highly desirable, but that the interval was so short that there was danger that inspections might not be made carefully.

The exact nature of the fire inspection carried out by the persons performing this function are naturally left to the discretion of the district. Persons carrying out fire prevention inspections may 1) do so using no guide lines other than the knowledge possessed by the inspector, 2) use a locally developed guide sheet, or 3) take advantage of the guide sheet which has been developed by the National Board of Fire Underwriters. All panelists agreed that the use of the board's rating sheet was desirable.

The use of a self-inspection blank developed by the local district was felt to be an acceptable procedure by a majority of jury members, although two members rated it as of questionable value. Inspections without a guide sheet were unanimously frowned upon.

In-service training

School districts which assign personnel to conduct fire prevention inspections take one of two courses; 1) they may establish an in-service training program for those to whom the responsibility is delegated so as to develop sensitivity to conditions which might enhance the possibility of fire, or 2) they assume that their personnel already possess the knowledge. In this case, no in-service training program is provided.

The panel members expressed themselves strongly in favor of an in-service training program for *all* personnel performing fire prevention inspections.

It seems clear as a result of the survey that school districts are remiss in discharging their responsibility if they do not have fire prevention inspections. These inspections should be so structured as to insure their being performed in a systematic manner. The recommendation of the National Board of Fire Underwriters and the Association of School Business Officials that they be conducted on a monthly basis by a local team, this team to be supplemented on a quarterly basis by fire department personnel and central office personnel, seems sound.

The use of approved check lists will insure district officials that the inspections are being conducted properly and will help the inspector. They also provide auditable records that such inspections were carried out, should a disaster occur.

Districts would be well advised to enlist the aid of their local fire departments in conducting in-service activities for the members of their inspection teams.

The best fire prevention lies in eliminating all places where a fire may start. Inspection is a prime tool toward this end. **End**

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CLOSED-CIRCUIT TELEVISION

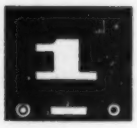
A special report

	PAGE
What's behind it all?	52
CC-TV: One answer to the school population boom	53
Closed-circuit TV—for every school budget	55
Training your TV staff	56
The teaching team	57
TV teaching—Does it work?	58
Will CC-TV save money?	60
Rules to follow to ready your new schools for TV	61
Summing it up	62

A special S/M *report*

What school managers should know about CLOSED-CIRCUIT TV

The time has come to drop the future tense so far as closed circuit television is concerned. It's here—and it appears to work. The unanswered questions are, "how should it be applied and how extensively should it be used?" Here is a factual report on its present state of development.



What's behind it all?

A full-scale war is being waged throughout the education world today. The battles are being fought in plush conference suites of major foundations, in stuffy meeting rooms of state and local teachers' organizations, and over coffee at numerous citizens' committee meetings. At issue: educational television. At stake: the education of tens of millions of American boys and girls—many still unborn.

Chief protagonists in the struggle over electronic teachers are:

1. The Ford Foundation—which has spent something like $23 million in the past half dozen years to set up various types of TV teaching experiments, create organizations to promote classroom video, and finance dozens of video research projects.

2. Teachers' organizations—notably the National Education Association and the American Federation of Teachers (AFL-CIO). Both are openly antagonistic toward classroom video. They see TV teaching as a means of eliminating jobs through the use of oversized classes.

3. Educational philosophers—from William Kilpatrick at one extreme to Arthur Bestor at the other—who fear the effects of a TV-created mass education.

But while the underground war rages on, interest in classroom *closed-circuit* television is booming. (Closed-circuit television cannot be picked up by receivers in the home, like normal telecasts. Every TV set must be hooked up to the same cable to receive the video signal.)

Just two years ago, the first city-wide public school closed-circuit TV system began operation in Pocatello, Idaho. Today, closed circuit television is in operation in over a dozen public school systems, including New York, Los Angeles, Fulton County, Ga., Evanston, Ill., Snyder, Tex., Baltimore, Md., Port Chester, N. Y., Miami, and a Maryland community called Hagerstown.

In all, more than 100 colleges, universities, and school systems are engaged in experimental TV in three dozen states and more are entering the field all the time.

Why the closed circuit television boom? The teacher shortage, pure and simple. Not just the shortage now, but the shortage *expected* five and 10 years from now. In Novem-

ber, 1955, the Fund for the Advancement of Education issued its now-famous study, *Teachers for Tomorrow*. In that report, statistics indicated that there would not be enough teachers to go around by 1965 if we maintained the present student-teacher ratio. Half of all our college graduates, the Fund estimated, would have to enter teaching over the next 10 years to meet the enrollment demand. But only 20% of all college graduates enter teaching.

How can the gap be bridged? Only one way, the Fund concluded: increase the student-teacher ratio. How? By educational television and the use of teachers' aides.

It is not the purpose of this report to argue the case for or against TV. This is merely a series of analyses and case studies showing what closed circuit television is, how much it costs, what facilities are needed for its operation, how TV teachers may be selected and trained, how studio and classroom teachers can work together, and how TV rates from the viewpoints of efficiency and economy.

Is TV for your school system? That's for you, and your community, to determine.

2 One answer to the school population boom?

■ ■ ■ To understand the proponents of classroom TV, one must understand that American education is undergoing revolutionary change. In a vastly complex and technological world, the thirst for formal schooling has become unquenchable. At the turn of the century, it was a parent's dream that his children might some day attend high school. But today's dream is for a college or university degree.

In 1900, only 11% of American youngsters aged 14-17 attended high school. It is now 83%. In 1900, 4% of our young men and women attended college. Today, more than 30% attend.

Both these figures are far out of proportion to the population increase; (from 75 million in 1900 to 170 million today).

And now Sputnik has served still further to step-up the demand for a highly educated populace.

How are the schools handling this growing problem of numbers? Not well at all. Here's why:

During the depression of the 1930's, the low birth rate kept school population down. Then came World War II. The birth rate shot up—but there were no materials with which to build new schools. Communities put money aside for post-war construction.

The birth rate kept climbing.

At the end of the war, prices for building materials skyrocketed. School districts started floating bond issues for new schools to accommodate the expected bumper crop of pupils born during the war. Then something strange happened. Instead of the birth rate levelling off —as it should have—it kept right on climbing.

Schoolmen revised their projected enrollments. It was apparent that new schools—and new teachers—would have to be found. But then a new problem arose. The low birth rate of the 1930's meant there would be a small number of college graduates (and potential teachers) in the 1950's. Where would the needed teachers come from?

To top things off, the Korean War broke out in 1950. Once again, a scarcity of building materials developed.

School construction lagged—but

3 KINDS OF TV TEACHING

Commercial programs

New York University's Professor Floyd Zulli teaches his "Sunrise Semester" comparative literature course over WCBS-TV.

Community educational

A second grade spelling lesson is conducted over educational station KETC in St. Louis. Charlotte Robinson is the teacher.

Closed-Circuit

A college professor addresses an unseen audience under the watchful eye of the television cameras.

Closed-circuit television, its proponents say,

Seven classrooms *are wired to pick up this telecast in New York University's closed-circuit experiment. Associate Professor Lillian Hornstein presents two weekly lectures on Chaucer. Once a week groups meet for class discussion.*

the country's birth rate kept climbing.

Each year for the past 13, our school enrollments have repeatedly hit record highs. We are short 135,000 teachers and well over 300,000 classrooms.

How can we solve these grave educational problems? Television is one answer, say its proponents. It may not be *the* answer, but it offers powerful arguments indeed.

There are three kinds of educational television:

1. Television programs which are carried over commercial stations. (A Shakespeare play, an interview with an important political figure, etc.)

2. Programs carried over a community's own educational television station. (There are now 28 non-commercial video stations on the air—owned and operated by universities, school systems, state education departments, or communities, and five more are going into action this Spring. They carry educational programs exclusively—including classroom lessons, adult education programs, school board meetings.)

3. Closed-circuit television, with which this special report is concerned.

The easiest way to think of closed-circuit television (CC-TV) is in terms of the public address system in one of your schools. By pressing a button in his office, the principal can speak to every student in the school simultaneously. No one outside the school can hear him. If the principal wanted to, and if wiring were provided, he could speak over a neighboring school's public address system at the same time.

CC-TV works in pretty much the same way. Only video sets hooked up to the circuit are able to receive the programs. Programs cannot be picked up on receivers in the home.

CC-TV is useful in public schools in two ways.

First—and probably most important—it can televise the same lesson to many hundreds, or many thousands, of students at one time. At the university level, where much teaching is straight lecture, this can mean huge savings in personnel costs. At high school and elementary school levels, this increase in student-teacher ratio, however, opens up a whole variety of problems. What about the slow student? The gifted one? The student with a question on his mind? Can all profit equally from the same televised lesson? TV experimenters are grappling with these problems and are attempting to solve them in a variety of ways.

The other major use for CC-TV is the enrichment lesson—the lesson which would not be economically feasible by any other method.

Every elementary teacher is expected to be an expert not only in reading, writing, and arithmetic, but also music, art, science, and physical education. In large school systems, there is usually money available for art and music specialists to visit schools several times during the school year to give special lessons. With CC-TV, specialists can "visit" hundreds of classrooms at a time and much more often.

Can CC-TV fit into your school budget? Is it very complicated? How does it work out in practice? These subjects are covered in the material that follows.

may be the answer to classroom and teacher shortages

Closed-circuit TV--for every school budget

■ ■ ■ The beauty of experimenting with closed-circuit television is that it can be installed for just about any budget—from $3,000 to $30,000 or more. It all depends on how much you want to make of your system.

In Schenectady, N. Y., fiscal experts thought Bernard F. Haake would have to pull off a miracle to build a TV installation for $3,000. But Haake, assistant to the superintendent of schools, found that with a little ingenuity—and some "shopping around"—a bargain-priced CC-TV setup was possible (SM, *Oct., 1957*).

Creative teachers *have opportunity for expression in Hagerstown system. Mrs. Mildred Vance prepares material for a talk on bird-life.*

First, an inexpensive classroom vidicon camera—one with interchangeable lenses—was purchased. Then Schenectady school maintenance men installed cables to connect TV sets in three adjacent classrooms in Euclid Elementary School.

Installation was simple. Telephone cable and sound wires were "pulled through some ventilators and clipped to the wall." The camera (and monitor) were attached in one room, and three sets hooked up in the adjoining rooms.

Second-hand sets were purchased for $40 each. The school's motion picture sound amplifier provided the sound system.

Total cost: $3,000.

Televised lessons by special resource teachers were given in science, nature study, music, use of the library, and geology to 150 fifth and sixth graders.

In Port Chester, N. Y., a slightly more elaborate closed-circuit TV system was set up for between $6,500-$8,000. Equipment consisted of two five-pound cameras on tripods, two control panels, two 17-inch monitors, and three 27-inch screens (one in the broadcasting rooms and two in the viewing classrooms). The viewing rooms were connected to the broadcasting room by intercommunication equipment.

At first this system was quite useful in general science demonstrations. Instead of repeating experiments over and over again in front of small groups of students, a science demonstration could be performed a single time for as many as three classes simultaneously.

Later, televised lessons included a demonstration of how to use the town voting machine, a lecture on banking by a local bank official, demonstrations of arc welding, casting, printing, and paper-mache construction.

This year, a member of the faculty has been designated director of television to help teachers experiment with television activities. A student Television Technician's Club has been organized to keep equipment in good operating order.

At Miami University, Oxford, O., the CC-TV system was much more elaborate. Backed by a $135,000 grant from the Fund for the Advancement of Education, the university constructed a TV studio in the temporary building housing the university's radio facilities. Five adjacent classrooms were hooked up with two 21-inch receivers each.

Here's what this more expensive project cost:

Fourteen 21-inch TV sets $2,051
One thousand feet coaxial cable $67
Ten connecting boxes for TV receivers $125
Three vidicon studio-type camera chains complete with control facilities, power supplies, lenses, tripods, dollies, and intercom sets $13,500
Video switching system $3,695
Synchronizing generator $1,530
Audio control console . $1,775
Vidicon film and slide chain, including a vidicon camera, console mounted camera control, 14-inch TV picture monitor, wave form monitor, two power supplies, 16 mm sound-film projectors, TV multiplexer, 2 x 2 slide projector $7,323
Radio frequency distribution amplifier $565
Miscellaneous test equipment $2,161
Complete studio lighting "package" $739
Studio and control room audio facilities, including three micro-

phones, mike boom, and transcription table $1,021

Total equipment cost: $34,552.

During the 1956-57 school year, four courses were televised over Miami's CC-TV: air science, economics, physiology, and human behavior. In all, 850 students participated—719 in TV classes, the remainder in normal-sized sections.

At the present time, Miami University holds a construction permit for low-power television transmission. It intends to experiment with complete campus coverage using open circuit transmission for course instruction. (This would mean that students in the area of the campus could pick up the TV signal on their home sets.)

Training your TV staff

■ ■ ■ Once you have your equipment—what about staff?

Staff selection and training varies very widely from TV system to TV system. In most areas where one or two cameras are brought in and hooked up to a few TV sets, CC-TV is regarded as an experimental gadget. Teachers are turned loose to experiment pretty much as they see fit.

In other areas, a very elaborate training system is used. Take the well-publicized Hagerstown, Md. county-wide system. As the model CC-TV setup in America—heavily backed by the Ford Foundation's Fund for the Advancement of Education and the Electronic Industries Association (formerly the Radio-Electronic Television Manufacturers Association)—Hagerstown carefully set up a summer workshop to train its teachers for TV.

For six weeks, more than 50 teachers, principals, supervisors, and PTA leaders sat down to thrash out their ideas about his new teaching tool.

Organized first into small groups, and later into larger ones, the participants drew up lists of those items they felt could be handled readily by direct TV instruction, and those "which would be difficult or impossible to attain."

Here is how the final list broke down:

TV teacher probably could

Motivate and stimulate students
Inform
Demonstrate
Show application
Enrich backgrounds
Raise questions
Provide common experiences
Suggest activities
Challenge pupils to assume more responsibility for their own learning

Instructor Jacqueline Wilkins has time for individual help while class attention is held by television.

of a television teacher with those of a classroom instructor

TV teacher probably could not
Handle class discussion
Care for individual differences in pupils
Clear up immediate misunderstanding
Supervise needed drill and problem solving
Provide for lesson followup
Direct and supervise activities growing out of the lesson
Provide remedial teaching
Help pupils to do something about the things learned
Provide opportunities for pupils to exercise critical judgements
Interpret the testing program
Give sufficient attention to establishment of desirable habits and ideals

On this basis, it was decided to create a "teaching team"—that is, a set of instructors for each student. The TV instructor might be shared with many hundreds of students, while the classroom teacher might have anywhere from 50 to 75 students. (For description of the "teaching team" in operation, see article which follows.)

Hagerstown TV teachers were chosen on the basis of many factors (including a telegenic personality). But most important of all, Hagerstown school officials looked for *good teachers*.

During the workshop, TV techniques were discussed, and sample lessons presented before the cameras. By the time school opened in the fall, instructors had a good background to begin TV lessons.

In St. Louis, TV teachers were selected after a series of auditions. They were all experienced teachers in local public schools with long records of successful teaching. (Note: the St. Louis system is broadcast—not CC-TV.)

The most important criteria in choosing teachers were, in order of importance:

1. *Success in classroom teaching.*
2. *Warmth of personality.*
3. *Pleasantness of manner.*
4. *Fluency of speech.*
5. *Telegenic personality.*

Before actual classroom lessons took place, St. Louis TV teachers taught lessons which were kinescoped (filmed). The teachers watched films of their lessons for self-criticism and evaluation. In some cases, teachers kinescoped lessons during the regular semester. This enabled them to visit receiving classrooms to see the effectiveness of their lessons first-hand.

Colleges and universities also tend to choose TV teachers with great care. Important qualities looked for in college TV instructors are on-camera personality, teaching ability and knowledge of subject matter. Many colleges hold closed-circuit TV auditions for prospective instructors.

The teaching team

■ ■ ■ HAGERSTOWN, Md.—Young (29 years) Edward Kercheval showed reporters his miniature Shakespearean theater.

"It took me 75 hours to build it, including research," he pointed out, "but it was worth it. I'd never have found time to put it together if I were a regular classroom teacher. Students get a big kick out of it—and I do, too. During one lecture—through a TV camera trick—I was able to speak to my students right from this tiny stage."

Edward Kercheval teaches English on television. He is a senior partner of a TV "teaching team", which combines the talents of the video teacher with those of the classroom instructor.

Here in Hagerstown, site of the nation's major closed-circuit television experiment, the "teaching team" has emerged as THE METHOD for television instruction.

This is the way it works:

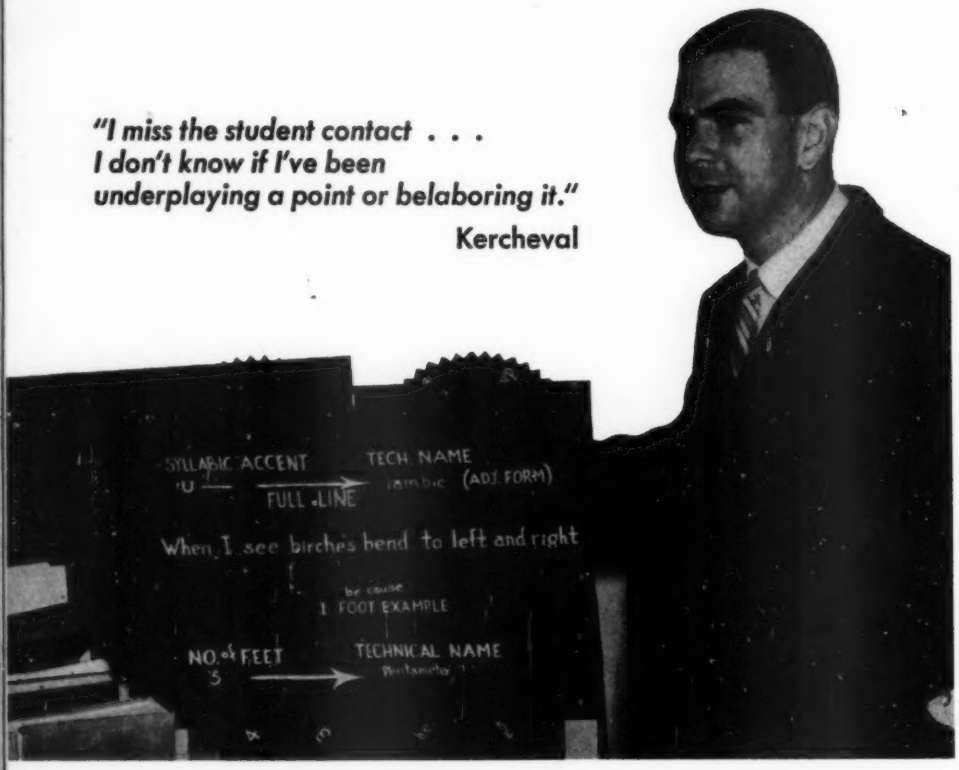
A TV teacher like Ed Kercheval (there are about a dozen in the system) may have as many as five classes each day, totalling 270 students. He teaches all five classes at once for exactly a half-hour each day, and plans his lessons the rest of the time.

It sounds like a short day, but Kercheval actually has a tougher schedule than any of the regular classroom teachers. He says that he spends up to 75 hours a week preparing lessons. Such preparation includes not only research, but previewing audio-visual materials, obtaining TV film clearances, constructing props, lettering video cue cards, etc. In addition, Mr. Kercheval confers informally with students and teachers, and makes it a point to mark several test papers for each one of his five classes.

The classes involved are larger than normal, ranging from 50 to 75 students in each room. Three or four 21-inch TV sets are installed in each class. The video lesson is 30 minutes. The remaining 20 minutes of class period is for the other half of the teaching team—the classroom instructor.

She must be prepared to answer students' questions, assign and check homework, proceed with and suggest follow-up lessons, or review some point that may still be unclear in the minds of students.

Complains TV teacher Kercheval: "I miss the student contact, and I still have trouble with my timing. Until the lesson is over—and I speak to the classroom teach-



"I miss the student contact . . . I don't know if I've been underplaying a point or belaboring it."
Kercheval

ers—I don't know if I've been underplaying a point or belaboring it."

Once each month, classroom and TV teachers confer for a post-mortem on the previous month's work, and to plan the following months'.

In this, the second year of Hagerstown's five-year experiment, 12,210 pupils in 23 area schools are participating in closed-circuit TV instruction. Next September, all 18,000 pupils in the entire county will take part in 48 different schools.

Though the program is much too young for anything but the most preliminary evaluation, Hagerstown officials have arrived at the following general conclusions about CC-TV:

■ *TV interest span for an average student is 30 minutes. The TV screen provides "an effective fixation point" for group instruction.*

■ *TV visuals (such as the Shakespearean theater) are excellent learning devices.*

■ *The TV camera can so magnify maps, charts and pictures, that every seat in the classroom becomes a front seat.*

■ *The TV teacher, looking into the camera, looks "straight into the eyes of each pupil." This "seems to have a psychological effect which causes the pupil to give close attention to what is happening."*

■ *A "capsule classroom"—representative pupils from each class appearing on TV for discussion—stimulates a great deal of interest. One of Ed Kercheval's pet projects was a quiz show testing grammar. He based it on the "Twenty-One" video program, and was happily surprised by enthusiastic student reaction.*

The impression should not be gained, however, that all pupils are head-over-heels in love with TV. They're not. We picked two 17-year-old high school seniors at random from a Hagerstown class.

"How do you like classes by TV?" they were asked.

Said the girl: "I don't like it very much, and I think that a consensus of students would show the same feeling. . . . It gets boring after awhile. It's not good when students can't participate. Maybe an intercom is needed so we could talk to the teacher."

Said the boy: "Television is good for presentation, but bad for discussion." He pointed out though, that his classroom teacher always answered his questions. On the bright side, he said "TV lessons are concise, and there is very little over-emphasis."

On the other hand, elementary youngsters were absolutely intrigued at special lessons in art and music. They sat enthralled through a TV movie dealing with an Indian legend. All the Indian characters were masked. After the film was over, pupils gleefully went to work with clay and papier-mache, imitating the TV teacher in creating their own Indian masks.

On a basis of the experience at Hagerstown, one official closely identified with the program has said, "There are only two things that can stop the coming of CC-TV in schools: 1) poor teaching and 2) poor equipment. Manufacturers have taken care of the latter."

TV teaching -- does it work?

■ ■ ■ Last February the largest demonstration of classroom TV was made to educators in a series of airless meeting rooms at the American Association of School Administrators convention. Here is an eye-witness report:

The room was in almost complete darkness—except for the glare of two large television receivers—one at either end of the hall. This room (and several others like it) was jammed with schoolmen getting their first look at TV lessons.

On the screen was physics lecturer Harvey White of the University of California. Dr. White (on film) was explaining optical illusions to his TV audience. At one point White turned to the televiewers and asked if they could see one illusion. "Those of you who can see it, raise your hand!" he ordered. As if at a given signal, a dozen middle-aged—but bright-eyed and eager—schoolmen shot up their hands.

Is TV an effective teaching de-

vice? Based on the demonstration at Atlantic City, one is tempted to say "yes." Can it replace the teacher? That remains to be seen.

After the TV demonstration, a reporter stopped a score of school officials at random, asking their immediate reactions to classroom TV. Almost to a man, the verdict was: "Good for supplementary instruction—but it won't replace the teacher."

The exception was a Massachusetts administrator who was particularly impressed with a teacher who taught French lessons on TV. It was obviously her native tongue. Said the Bay Stater: "I think it's much better to have the language taught this way than by having teachers with Boston accents or Texas accents try to teach it."

Opinions about classroom TV are far too numerous—and far too partisan—to be listed here. Case studies, however, seem to indicate that TV instruction can be quite effective.

Here are a few examples:

Item: In Camp Gordon, Ga., 12,000 trainees were split into two groups for basic training. Regular classroom instruction was duplicated on TV—with no special television techniques added. Subjects taught included map reading, signal communications, mines and booby traps, light machine gun dis-assembly, defense against air and armor, military justice, squad tactics, and M-1 rifle functioning.
Results, according to the Human Resources Research Office of George Washington University, Washington, D. C.:

1. TV instruction was generally more effective than regular instruction.
2. It was particularly effective for "lower aptitude individuals".

In a second test, involving 3,000 soldiers, a course in electronics was given to two groups. The control group took the normal four hour course, with face-to-face instruction. The experimental group took a special two-hour TV course, which included extensive visual aids, close-up pictures, super-imposition of pictures, and other TV techniques.
Results: TV teaching effectiveness was found to be either better than or as good as regular instruction.

Item: At Pennsylvania State University, some 225 students received chemistry lectures in a large lecture hall. The same number watched TV lectures in small classrooms. All students had regular recitation and laboratory instruction.
Results: No significant differences in achievement.

In general psychology, 320 students took part in a second experiment. Eight classes were involved. One instructor taught two TV classes and one face-to-face. A second taught one class face-to-face. Then with four *different* classes the two instructors switched roles.
Results: No important differences found in measured performances.

Item: In St. Louis, community TV station KETC-TV was used for experimental teaching of 9th grade general science, 9th grade English composition, and 2nd grade spelling. Instruction was given to large groups of pupils—up to 150—by means of television alone. No supplementary teaching was used.

Instruction in science and English was 30 minutes a day, five days a week, for one semester. Spelling lessons were 20 minutes a day, five days a week for two semesters.

Results: As measured by the testing instruments used, the results showed equivalent degrees of achievement. However, students did not react favorably to the TV program. More than half of them thought they would have learned more in a regular classroom.

Item: At the Chicago Junior College, three methods of instruction were used for English, biology, social science, and political science.

In group one, students observed telecasts in their own homes, without teacher contact. (An educational TV station was used for the telecast, rather than CC-TV, for this particular experiment.)

In group two, students observed telecasts within the college. There was supplementary instruction by teachers.

In group three, students received the normal class instruction.
Results: Numerical final grades of TV students were *about 10% higher* than those of non-TV students.

Item: In Cincinnati, television station WCET was used for the following experiment:

Some 186 pupils in six high schools received chemistry instruction three days a week for seven

As the British *see classroom TV: "So! Doing your homework when you should be watching television!"*

Reproduced by permission of PUNCH

weeks by TV. During this time 702 pupils received regular instruction. There were no significant differences in average ability between the two groups.

Results: Average scores on the final test were "significantly in favor" of the TV pupils.

Item: The Hagerstown experiment, because of its size, promises to be the best test of TV at the secondary school level. Quite properly, officials are unwilling to make claims until they have been validated over a broad statistical base. Preliminary reports recently circulated to EIA members are extremely optimistic, however. Here are a few highlights:

1. Tenth grade plane geometry students have shown considerable improvement over regular classroom teaching. These classes were more than one month ahead in the first six months of school, compared to students of other years who received classroom instruction. Also there were less failures than had been experienced in previous years.

2. In fifth grade arithmetic, the Iowa basic skills test was given after the first six weeks of regular classroom teaching, and before teaching by TV was started in this subject. It was found that the median achievement in the subject was below normal. At the end of the year, and after five and one-half months of teaching by television, the median for this same group was a number of months ahead. In other words, the group achieved a standing from below normal to above grade level. Results compiled during the five-year project will help show the extent television is responsible for the improvement.

3. Better inservice training of new teachers than ever before possible was accomplished. Daily observation of the teaching methods of the more experienced teachers helped the new ones to become adjusted more rapidly.

Not all the experiments in TV have been successful, however. At Purdue University, two courses were given in mechanical engineering and physics. In both cases, there were both TV and conventional classes.

Results: Conventionally taught groups received higher average scores than TV groups. (Differences were slight and may have arisen by chance.) Telestudents were asked at the conclusion of the experiment:

Is TV instruction as interesting as classroom instruction?

Are you inclined to do more homework for a TV class?

Can you take better notes? Do you come to know your instructor as well?

The answers to all these questions: a decided "No!" Student reaction to TV, which was "mildly" negative before the experiment, was markedly so, afterward.

Will CC-TV save money?

■ ■ ■ Most educators who back educational television will wince when you ask the obvious question "will educational television save money?"

They wince because it's the question that stirs up teachers' organizations. It makes some of the teachers a little less secure about their jobs.

But—with rising costs and a skidding teacher reserve—it's the proper question as far as school management is concerned. If you can't find—or can't afford to hire—10 teachers, will one TV master teacher do? Will a dollars-and-cents savings result?

Video backers usually mutter that it's much too early to say. Or that, of course, it will save money, but no one knows how much. Or that everything will come out even, because the money you save can be put into higher teaching salaries.

But one of America's outstanding educators—Dr. Alexander J. Stoddard—has put his reputation right on the line by backing television four-square.

Stoddard states flatly, "universal incorporation of television in the nation's schools could effect a saving of 100,000 teaching positions and half a billion dollars in salaries yearly."

Stoddard, former Philadelphia, Providence, Denver, and Los Angeles school superintendent—makes it clear that this would mean no mass firing of teachers. Because of increased enrollments coming up in the next decade, there soon will not be enough teachers to go around. But with TV, the job can be done with fewer teachers—"not fewer than we have now, but fewer than we could need 10 years from now."

The distinguished educator made a year-long study for the Fund for the Advancement of Education. He consulted 1,000 persons in 72 communities before making his recommendations in the report *"Schools for Tomorrow."*

In this report, Stoddard proposes a model plan for students to use CC-TV at the elementary school level (grades 3-6 inclusive). He claims the plan would mean 10% to 20% fewer trained teachers than under the traditional set-up.

1. Six hundred students would be involved in all. For part of the school day, place half of the pupils with regular teachers in smaller-than-normal-size classes. (About 25 per teacher, instead of 30 or more.) Subjects like English, reading, writing, arithmetic, social studies, and the drill and technique sides of art and music might be assigned to regular teachers. These teachers would get clerical help so they could concentrate purely on teaching.

2. The other half of the children would take subjects like art, music, physical education, safety, library usage, modern languages, "and many phases of regular subjects" in much larger classes. Such classes would be held in a "resources room" (with television, or other audio-vis-

ual aids) in the auditorium, library, music room, little theater, playground, or gymnasium. In these larger classes (from 75-150 pupils) there would be a special teacher plus a teacher's aide.

3. After lunch, the two schedules would be reversed, the same teachers doing for the second half of the day what they had done in the first half. (*See chart on this page.*)

Personnel involved in this setup: 12 regular classroom teachers, three special teachers, four aides, a curriculum coordinator, and possibly "a half" music teacher and "a half" secretary.

At the college level, there is no doubt that CC-TV can indeed save money. Last year, Pennsylvania State University saved 40% on instruction costs for four subjects.

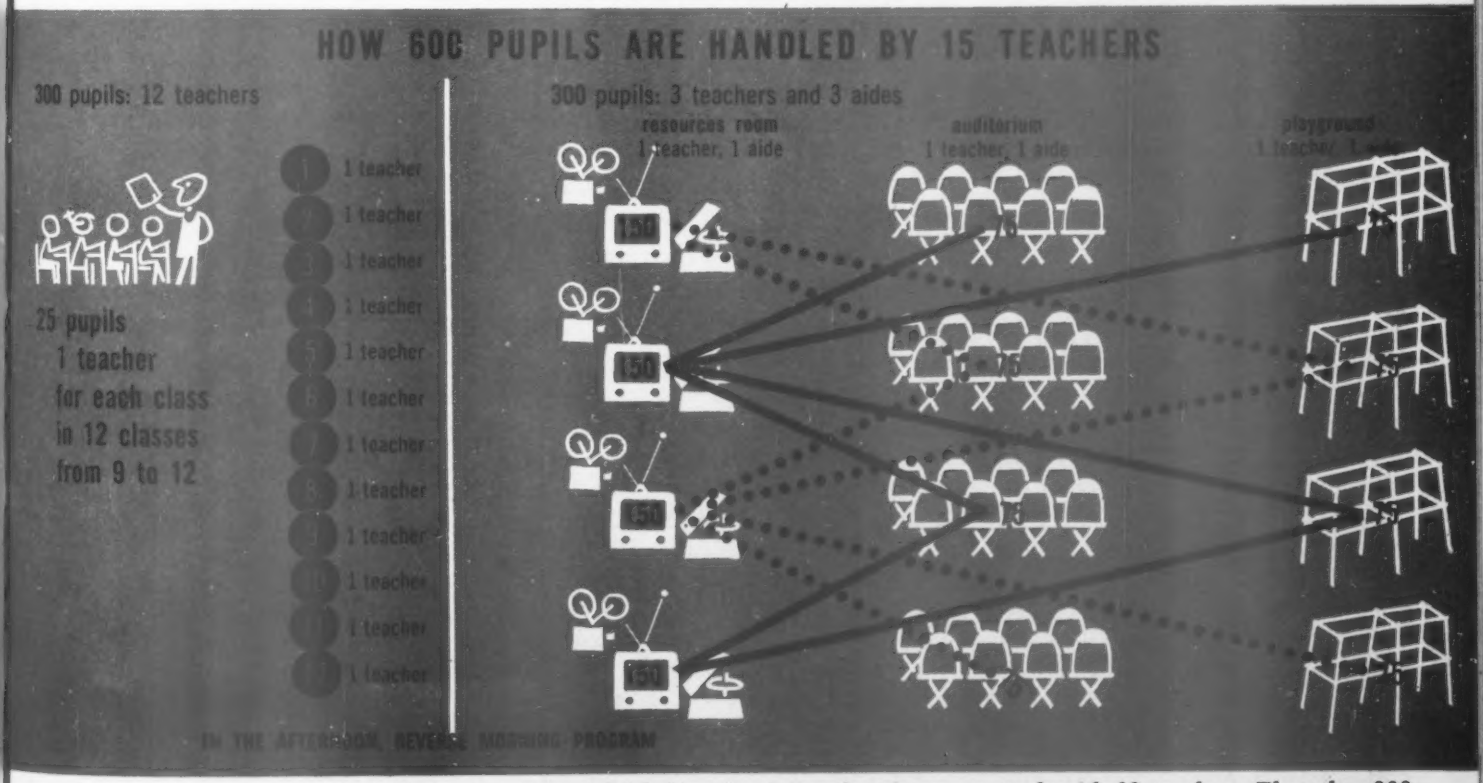
Television classes in accounting, air science, psychology, and sociology were presented to Penn State students at a cost of $52,000 last year. Ordinarily, conventional instruction would have amounted to $92,000. Savings on these four subjects alone: $40,000!

8 Nine rules to follow to ready your new schools for TV

■ ■ ■ Want to be ready to equip your new school building for television use? Dr. Thomas A. Weir, former coordinator of school program and station relations in St. Louis, lists these rules to follow:

1. Make sure that every room has good acoustics.
2. Rooms should have indirect lighting.
3. Provision should be made for good ventilation.
4. Provide a good antenna installation.
5. Build in coaxial cables and antenna lines.
6. Equip every room with built-in high quality speakers.
7. Provide for one or more 24-inch TV sets in every room mounted on pull-out rollers and properly ventilated to prevent overheating.
8. Arrange for a central sound system with talk-back arrangement.
9. Allow room for a radio-television studio and control room, with associated equipment.

How about your present buildings? Well, first try to improve acoustics, lighting, and ventilation wherever possible. See if you can convert the radio workshop or auditorium stage into a closed-circuit TV studio. Install your antenna, coaxial, and wire leads into classrooms which will receive TV programs. (If you install these leads in *all* the classrooms, you can use large portable TV sets which can be pushed from room to room, as needed, and reduce initial investment. Make sure these sets are



Under this proposal, 300 students *at a time spend half a day in regular classroom work with 12 teachers. The other 300 are divided into two groups of 150. The first spends a period in the resources room, then splits in half for the second period, sending 75 students to the auditorium, 75 to the playground. For the third period this group reassembles in the resources room. During period four it is split again with the 75 who had been in the auditorium now going to the playground. The second group reverses this procedure using the resources room in periods two and four.*

mounted on stands with four-inch wheels.)

L. P. Greenhill, associate director of the Penn State University instructional research program, points out that a room 20 x 30 ft. is adequate for most types of classroom presentations. Enough lighting should be added to the room to provide 125 to 250 foot-candles. Air-conditioning is highly desirable (otherwise, forced ventilation is a must). Adds Greenhill:

- Acoustical tile should be applied to the ceiling, front, and rear walls of the room. Walls should be deep cream or light green—NOT white.
- Pipes two inches in diameter should be placed across the room near the ceiling at front, middle and rear to carry spotlights and floodlights.
- A control room of about 20 x 15 ft. would be very helpful near the origination room—preferably with a glass window between the two rooms.
- Make sure there is an adequate supply of power for both TV equipment and lights.
- In classrooms receiving TV lessons, Greenhill recommends acoustical tile on ceilings and rear walls, movable seats, and air conditioning or forced-air ventilation.

Shakespearean miniature theatre is shown by Ed Kercheval

- Artificial lighting fixtures, he says, should be mounted against the ceiling (NOT suspended). This will reduce reflections on TV receivers. AC outlets should be provided for TV receivers.

Alexander Stoddard says that no elementary school building should be built without the following:

1. Two or three rooms large enough to seat 100 to 300 pupils each. Rooms should be TV-equipped, sound-proofed, ventilated.

2. Auditorium to seat 100-200 pupils. It should have a small stage, and an "activities space" up front.

3. Play facilities, preferably a covered space outdoors, where 100-200 pupils can play at any time of day without having noise interfere with other classes.

4. TV studio and CC-TV apparatus connecting all parts of school.

Summing it up

■ ■ ■ The only conclusion to this special report on closed-circuit television . . . is that there *is* no conclusion. Experiments are now going on regarding CC-TV. Many more will be set up in the years ahead. It seems likely, however, that TV has entered the classroom to stay. The real questions seem to be "How can it best be used? and "How widely should it be applied in the schools?"

If you're considering setting up CC-TV, or if you'd like further information to help make up your mind, the following organizations which have done major studies on the subject will be helpful to you:

Fund for the Advancement of Education, 477 Madison Avenue, New York 22, N. Y. (They'll have loads of reports on CC-TV programs. One "must" is Alexander J. Stoddard's "Schools for Tomorrow". It's free.)

National Association of Educational Broadcasters, 14 Gregory Hall, Urbana, Ill.

Joint Council on Educational Television, 1785 Massachusetts Avenue, N. W., Washington 6, D. C.

U. S. Office of Education, Department of Health, Education and Welfare, Washington, D. C.

If you have moved beyond the "consideration" stage and now want dollars and cents estimates, as well as practical guidance on the mechanics of installing closed-circuit television, manufacturers of the equipment are an excellent additional source of information.

For a list of major suppliers of equipment for closed-circuit television, together with the names and addresses of the individuals to contact, please **circle number 794** on the Reader Service Card. **End**

Less sun—better light

California school provides better illumination, improved ventilation, with the use of exterior louvers.

■ ■ ■ Adequate lighting in classrooms is not solely a matter of brightness. Architects and engineers have come to learn that it is, rather, a question of balancing that brightness within the field of vision.

Thus, under certain conditions better visual results can be obtained by actually *reducing the amount of light available* within a room, if the amount of outside glare is reduced at the same time.

This is the principle which guided the designers and builders of the John Muir Junior High School, Burbank, Calif., when they erected their building about five years ago. Principal Robert D. Leland has pointed out that the adjustable louvers have made it possible to use projection equipment in every room of the building, have materially reduced vandalism and have provided better control of room ventilation.

Help program

"Generally speaking," he says, " the louvers have had a positive effect upon our instructional program and the over-all appearance of the school."

For countless years it has been recognized that insulation is essential for the comfort of building occupants; architects and builders have always made use of the latest materials available to minimize transmission of the sun's heat through walls and roofs. Today, therefore, windows remain as the areas that admit more heat per square foot than any other part of a building.

Engineers agree that a sun control device, concerned with both heat and glare, must accomplish these things:

1. Exclude solar heat.
2. Keep out glare of sun and sky.
3. Admit sufficient reflected and diffused light to provide optimum natural lighting conditions.
4. Distribute light evenly over a given area.
5. Compensate for variable weather conditions and for the movement of the sun.

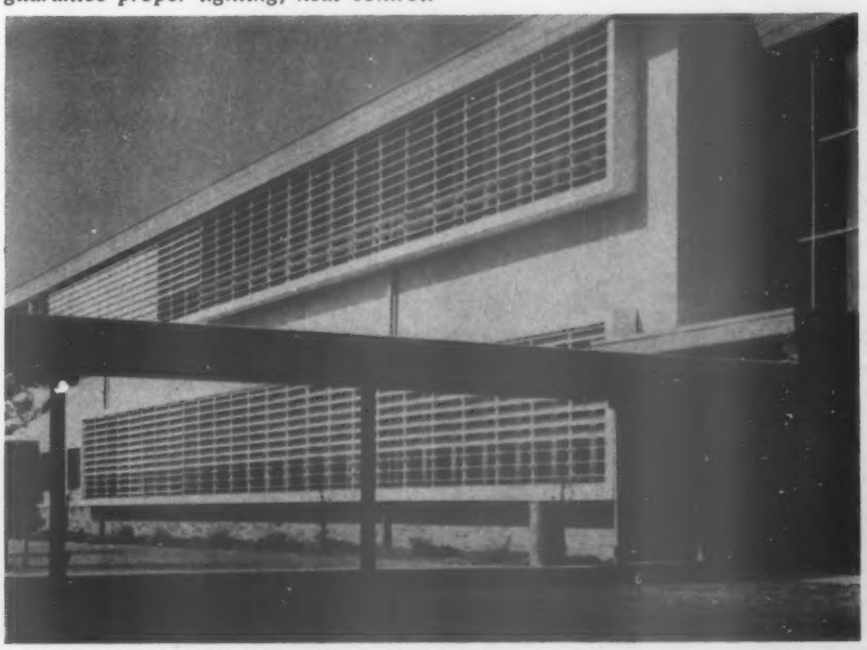
Louvers do job

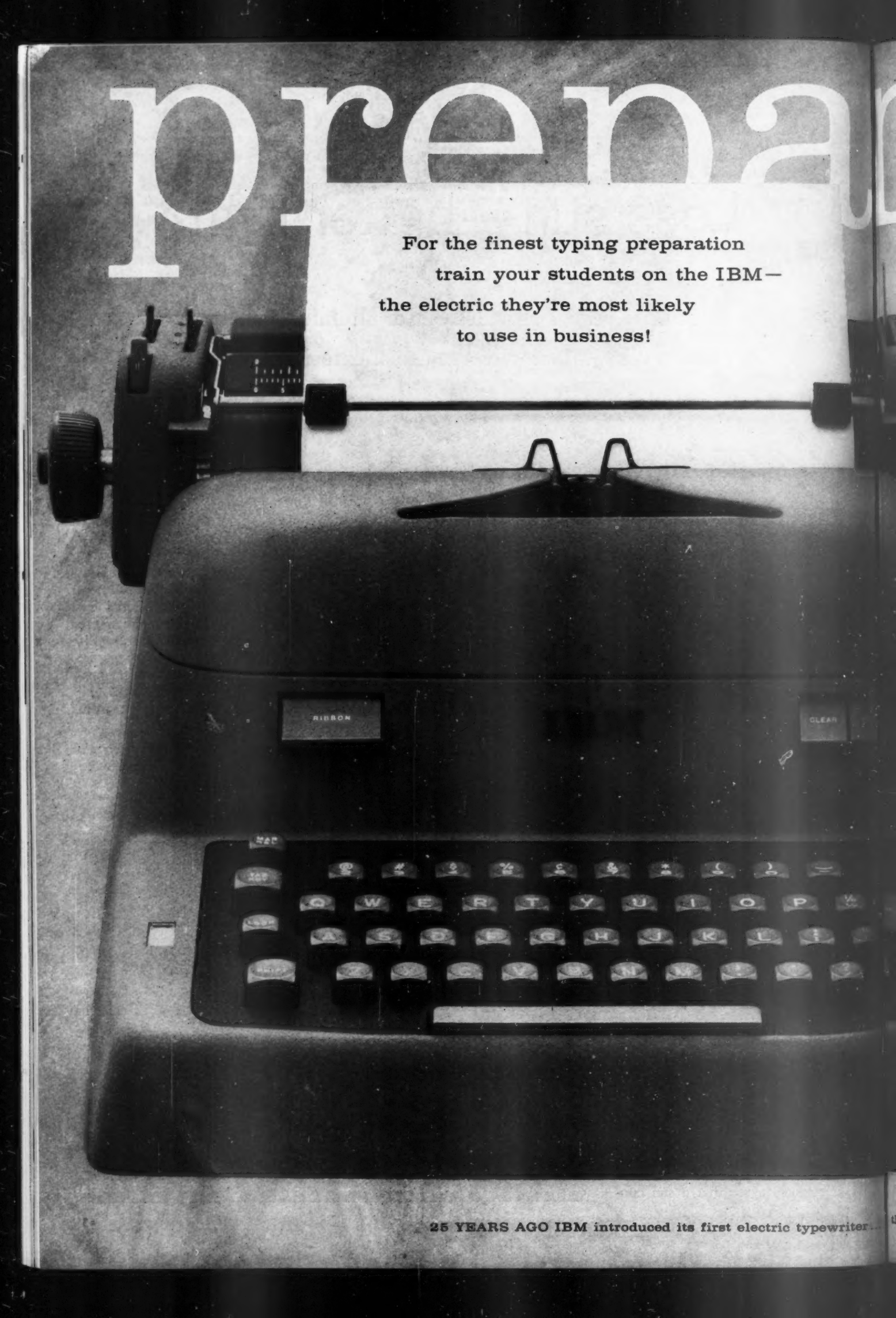
Lemlar louvers, as employed at the John Muir school, have fulfilled these requirements through their exterior location, by parallel vane arrangement and by virtue of their adjustability.

In addition to their role as controllers of light and heat conditions, exterior louvers protect window glass from rain and snow and from breakage; vandalism at John Muir is said to have been reduced to negligible proportions. The initial expense, as well as the maintenance costs of inside blinds and drapes, is entirely eliminated when louvers are substituted. Ideal classroom temperatures, keeping students alert and attentive, are said to result from their use.

For further information circle number 792 on the Reader Service Card.

Louvers on windows *of every classroom in the John Muir Jr. High School guarantee proper lighting, heat control.*





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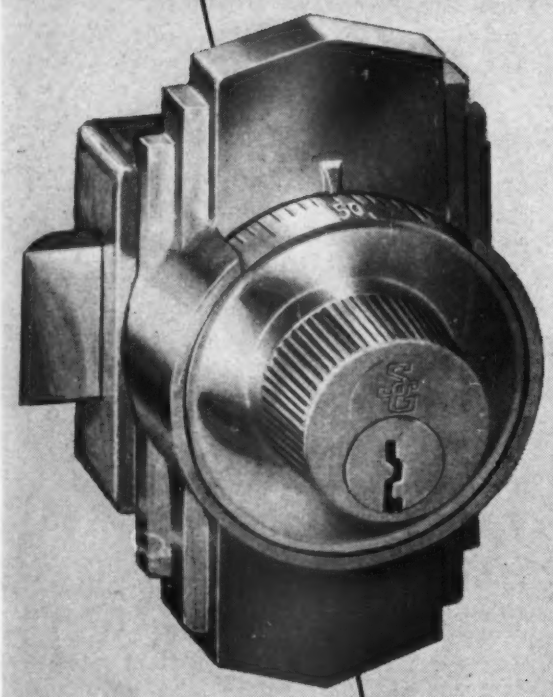
this year IBM continues its leadership with its one millionth electric typewriter!

What's HAPPENING to School Lockers



A new locker lock by Sargent & Greenleaf, Inc., who for over a century has spoken to its vast trade in government, institutions, and commerce in terms of security and fine quality. For security and durability are the keynotes of a good, dependable lock.

The value of this know-how cannot be over-estimated in terms of durability, security, function and operation. Compare any lock with the new S/G 8020 locker lock features shown on the check list below. We know you'll agree, the S/G 8020 will become the standard by which other makes will be measured.

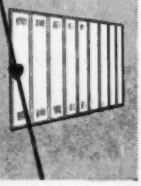
. . . And perhaps the best news of all—The S/G 8020 COSTS NO MORE than other makes now in use.

△ Spy-proof dial minimizes expensive claims of theft.

△ Combinations may be changed frequently and quickly without opening the door or disassembling the lock.

△ Screw assembly (no rivets) means maintenance on the spot.

△ Locker may be locked or latched at option of user.



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(For more information, see last page)

Centralized feeding: solving the garbage disposal problem

■ ■ ■ Hot lunches for an entire school district of 21 schools, are being successfully prepared at one central kitchen in the Norwalk-La Mirada, Calif., area.

An average of 5,500 meals each day is being prepared and sent to the school cafeterias in the 15 sq. mi. district; the food is shipped in electrically heated or chemically refrigerated compartments of specially designed carts which are placed on trucks.

According to Bruce B. Butler, assistant superintendent, the central kitchen, which is equipped to supply 10,000 meals each day if necessary, has these advantages:

1. It assures constant and rigid quality control at all stages of food preparation.
2. Fewer trained personnel are required to staff the operation.
3. Valuable floor space—saved through design of kitchenless school cafeterias—can be made available for classroom use.
4. Taxpayers are spared the initial expense of equipping each new school with a complete kitchen and later maintenance costs.
5. Students may be charged less for lunch because of the savings realized through preparing meals in the central kitchen.

Raw food stuffs and partially-prepared foods are delivered to a warehousing area, at the far left of the central building, to be stored until needed.

Components of the lunch under preparation each day are placed on a conveyor belt spanning the kitchen's rear wall. The belt picks up the completed dishes as it passes through a sandwich-making station, salad and vegetable preparation area, hot food section, meat department and bakery.

It finally deposits pans of ready-to-serve courses near a cart loading station, opening directly onto the truck loading platform at one side of the building.

Meals placed on carts

As the pans of completed courses are deposited at the end of the conveyor belt, they are placed in the heated or refrigerated compartments of the carts.

Three rows of railroad-type trucks and an overhead bank of electric cords make it possible to load a trio of carts at one time and keep the electric compartments warm until trucks arrive to carry them to

How a California school district solved a major obstacle to a smooth-working feeding program.

the schools. After these carts are loaded, they are rolled to the rear of the area, and three more are moved into loading position.

The trucks are backed up to the loading platform, their hydraulic tail gates lowered, and the carts moved aboard. When the carts arrive at the school, they are set into the counters as warming tables.

Installations at each of the system's 21 schools are very similar. Students file in the right side of the cafeteria to receive food from the "warming tables" and pay for their meals.

After they have finished eating, the students pass by a window at the cafeteria's left, on their way to the playground. Monitors are stationed at this window to see that silverware is placed in a basket and paper cartons and straws in another container. The trays themselves are passed through the window to a student helper.

All 21 carts are generally back at the central kitchen by 3:30 p.m.

One major problem that faced the district was garbage disposal. When the central kitchen was first set up, in 1951, food waste had to be carried through the kitchen to garbage cans and cases. Twenty-nine containers were filled daily.

A special room had to be put aside in which to store the waste containers until they could be carted away. The same problem in miniature confronted each of the schools the kitchen served.

In 1954, when the central kitchen was remodeled, Waste King garbage disposal units were brought into the kitchens. Two heavy-duty commercial units were placed in the central kitchen at points where most food waste originates.

This point of origin system completely eliminated the need for garbage cans. One unit alone, in the vegetable preparation area, pulverized during a period of just three hours as much waste as had been placed in 24 containers.

At the same time, each school was equipped with a smaller food disposer unit, equipped with an overhead spray rinse assembly to help wash waste directly into the sewer system. A special safety guard top and a silverguard are built into the machines.

This makes it possible for a student to scrape food from plates into the machine, saving the expense of hiring professional help. **End**

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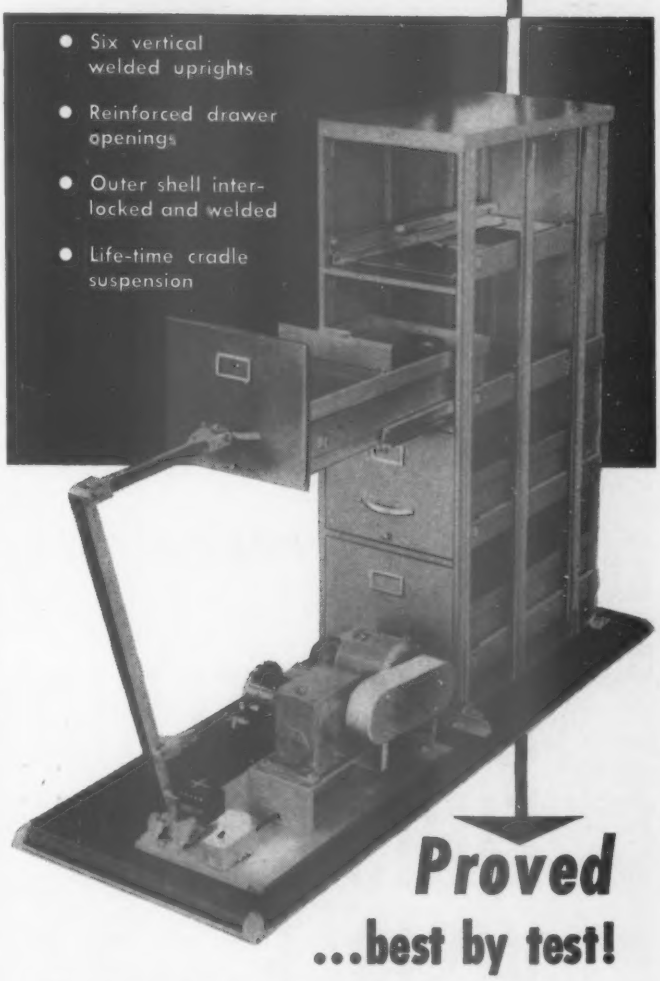

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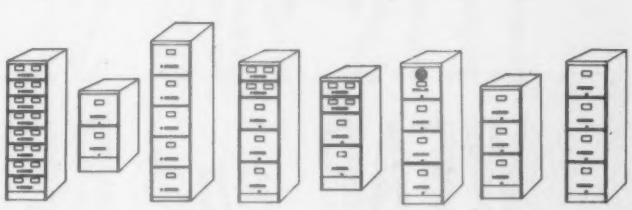

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FINISH
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style...
WITH "VERI-FIRE"
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PATENT
PENDING
A STARTLING NEW FLOOR
FINISH THAT IS BOTH
VISIBLE and INVISIBLE
...STYLE'S LOOKING GLASS
LETS YOU SEE APPLICATION,
WEAR and REMOVAL
THRU VESTAL RESEARCH . . . ANOTHER NEW PRODUCT FOR BETTER MAINTENANCE

END DECEPTION

Your eyes can be easily deceived. They'll see a high gloss on floor finishes when the gloss really is on the floor itself; they'll tell you one finish lasts as long as another when there's a big difference in the wearing qualities of the two; they'll mislead you into believing your floors are well protected when the floors aren't protected at all.

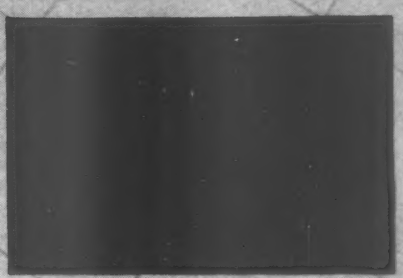
Why? Because the thin film left by floor finishes can't be seen. It's transparent. That's why the gloss you see may be a shine on bare tiles, not a shine on protective finish.

DON'T GUESS...KNOW

Now for the first time new tell-tale STYLE ends the guess work—gives you the true picture of the finish on your floors.

New STYLE with the "Performance Veri-fire" is invisible under ordinary light, but when you cast, safe easily-available black light (Long Wave Ultraviolet Illumination) on the new STYLE finish, it immediately glows—you *see* the finish. See the comparative photographs below of the 4 floor tile panels, each under ordinary light and under "black light."

WHAT YOU SEE

UNDER REGULAR LIGHT	UNDER BLACK LIGHT
Leveling appears to be good.	Leveling is actually poor.
	
Application looks uniform.	Proves application is uniform.
Finish shows no apparent wear.	Finish shows hard wear.
You can only guess if stripping has been complete.	If fluorescence is gone you know stripping has been complete.

What is STYLE?

STYLE is a completely synthetic floor finish consisting of long-wearing co-polymer plastic resins, dispersed in water emulsion form. Producing a longer-lasting, protective finish on floors, it is designed to replace self-polishing floor waxes. It has high water resistance — (permits damp mopping)—yet it is easily removed by ordinary wax stripping methods. A coating of STYLE is dirt-resistant and scuff-resistant—retains its initial brilliance longer than any wax product. This means lower labor costs while maintaining excellent appearance.

How does STYLE'S "Veri-Fire" Work?

Simple, very simple . . . a portable black light is held above the STYLE finished floor. Immediately, like a touch of magic, the looking glass fluorescence in the STYLE finish takes fire and TELLS:

1. If application is *complete* and *uniform*.
2. If good leveling has been obtained.
3. If the finish requires re-application.
4. If there's too much build-up.
5. If stripping has been complete.

Right before your eyes the *true* condition of the floor finish has been positively determined. You can then take the necessary steps as indicated by the black light analysis.

What does this Tracer mean to you?

It means that with the use of STYLE on your floors, you can keep tight control over your maintenance program . . . Eliminate wasted man hours . . . Eliminate excessive use of materials . . . This gives proof positive at all times that you have a quality product. This guarantees dollar savings to you.

Only STYLE Dares to Tell!

Only STYLE can risk the "Veri-Fire" Performance Tracer!

Only STYLE lets you see for yourself!

Look in the Looking Glass!

Without obligation we will send our representative and his "black light" to demonstrate right on your own floor that STYLE *is* a revolutionary product with revolutionary performance control . . . SEEING IS BELIEVING. Just write us on your letterhead. But do it TODAY.

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(For more information, see last page)

continued from page 41

purpose rooms. A combination "auditorium-gymnasium-cafeteria" was built in more than a quarter of the schools. Combination "gymnasium-auditoriums" were constructed by 22% and "auditorium-cafeterias" by 17%. A "gymnasium-cafeteria" was built by just 6%.

Less than half of the respondents expressed complete satisfaction with their type of combination!

Although most schools reported their multi-purpose rooms were being used for the activities for which they were constructed, more than a quarter had scheduling difficulties.

6 *Plan for Communication*

Communications have become a major problem in the modern school. Three types in particular must be considered during construction phases. These are: communication with the world (television); communication with the home (telephone); and communication within the building (intercoms).

Although the great majority of schools built during the decade studied did *not* wire their buildings for television and radio, during the last two years encompassed by the survey, the trend was reversed. Further, of all the schools that had wired for television, only one found it in any way less than satisfactory. More than one-third of the schools that had failed to wire for television found this unsatisfactory.

Many children have need to call their homes during the day. If the office phones are the only ones available this can cause a serious tie-up on the lines. With this in mind, more than half the schools constructed put in public toll telephones for the use of the students. In almost 85% of the schools, the phones were at a special low height.

Intercommunication systems have been installed in 88% of the schools surveyed. The importance of such systems has, of course, been increased by the construction of sprawling school plants that cause teaching areas to be widely separated. In some of the schools (29%) it was possible to communicate between classrooms, but most schools evidently did not feel this was necessary. In more than half of the schools, it is possible for the office to communicate with individual classrooms. In general, from an ethical point of view, a system which makes it possible to listen in on classrooms was considered undesirable, although in most systems a light appears in the classroom when the circuit is open.

7 *Corridors can be useful*

Despite the opinion of many leading architects and schoolhouse theoreticians, corridors are usually designed into buildings and the people working in the schools find them desirable.

Better than 97% of the schools studied had corridors. There were twice as many double-loaded as single-loaded corridors, and some schools made use of both types. Only 1% of the reporting schools expressed dissatisfaction.

One interesting development is that corridors are *not* being used just for passageways. Schools reported that they were put into use for rainy-day activities, community meetings, showing films, and as art galleries. Using the corridors in this way answered many critics who contended that corridors should be eliminated because "they serve no educational purpose."

On the other hand, the few schools that had no corridors, it must be reported, showed little dissatisfaction with the construction.

Many schools indicated that they used outdoor corridors. Of these, 93.5% left them uncovered and almost one-third expressed dissatisfaction with the results.

(More details of Dr. Phillips' study in a future issue.) **End**

Many Place Their Washfountains in Corridors for Boys and Girls

Some school authorities and architects prefer placing Bradley Washfountains only in main washrooms—while others put a smaller number there but place Washfountains also in corridors near rest-rooms, near cafeterias, in art classrooms or workshops.

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Be sure to have your maintenance man use a floor wax containing "Ludox," Du Pont's anti-slip ingredient . . . give your floors the appearance you want, plus added safety underfoot. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Room N-2533L, Wilmington 98, Delaware.

Double-action rug and upholstery shampoos—a new use for LUDOX®—New shampoos containing "Ludox" *clean and treat* rugs against resoiling in just one application. "Ludox" fills microscopic fiber crevices . . . protects surface so dust and dry dirt don't cling. Dirt stays on surface for easy removal.

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(For more information, see last page)

Two top companies unite to bring educators

The Best in Closed-Circuit TV

See for yourself! ***Don't settle for any closed-circuit television until you've seen how completely the GPL/NTS Team answers all your school needs!***

You'll see GPL equipment – finest in the field! Closed-circuit television that has *had* to be the best to achieve its pre-eminent position in military, broadcast, and industrial TV!

You'll get the quality that made GPL equipment the inevitable choice for front-page "firsts" in closed-circuit programs – the Salute to Eisenhower Dinners, which linked 52 cities – the Heart Video-Clinic, viewed by 35,000 medical specialists – the General Motors Motorama, celebrating its 50 millionth car – the nationwide theatre broadcasts of heavyweight championship fights.

GPL leadership in designing TV for direct instruction, teacher training, magnification, and other special needs has made it the first choice for pioneering educational TV installations at over 30 schools and universities.* 90% of the nation's educational TV stations using video recorders are also GPL-equipped.

GPL equipment is simple to operate, versatile, surprisingly inexpensive. There's a full line of closed-circuit equipment to fit the needs of a single school or an entire school system.

National Theatre Supply Company, a prominent supplier of projection and auditorium equipment for schools, has teamed up with GPL to assume complete responsibility for all your School TV needs. Both are member companies of the highly respected GPE Group.

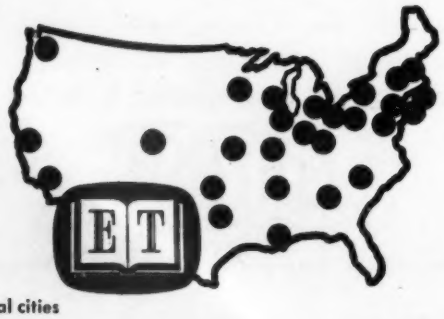
Call on the Educational Television Division of NTS for free demonstration in your school of how this GPL/NTS set-up answers all your needs. A national network of company offices – the largest nationwide sales and service organization offering TV equipment for schools – brings an NTS representative as close as your telephone!

Technically trained and with over 30 years of experience in field service, your NTS representative is qualified to help you at every step in choosing, installing, and maintaining your closed-circuit TV.

He will sit down with you, your school committee, or your architect, to discuss the preliminary requirements of a TV installation. He will give you practical advice on the selection of the right equipment. He will take full responsibility for delivery and installation, financing if required. He will follow through by instructing teachers and students in its everyday use.

Maintenance is no problem with NTS! Parts and service are promptly available anywhere in the United States. Your NTS representative is steeped in the tradition of "the show must go on," so he stands ready to help in any emergency – anywhere – at any hour of the day or night.

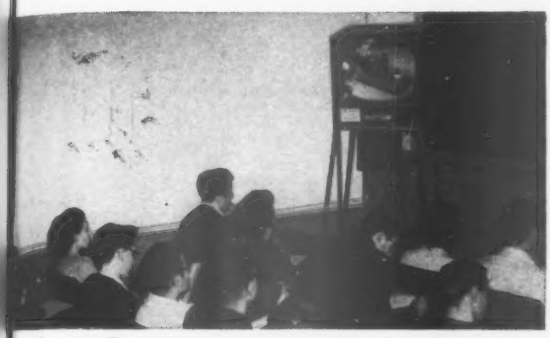
*Details on request.



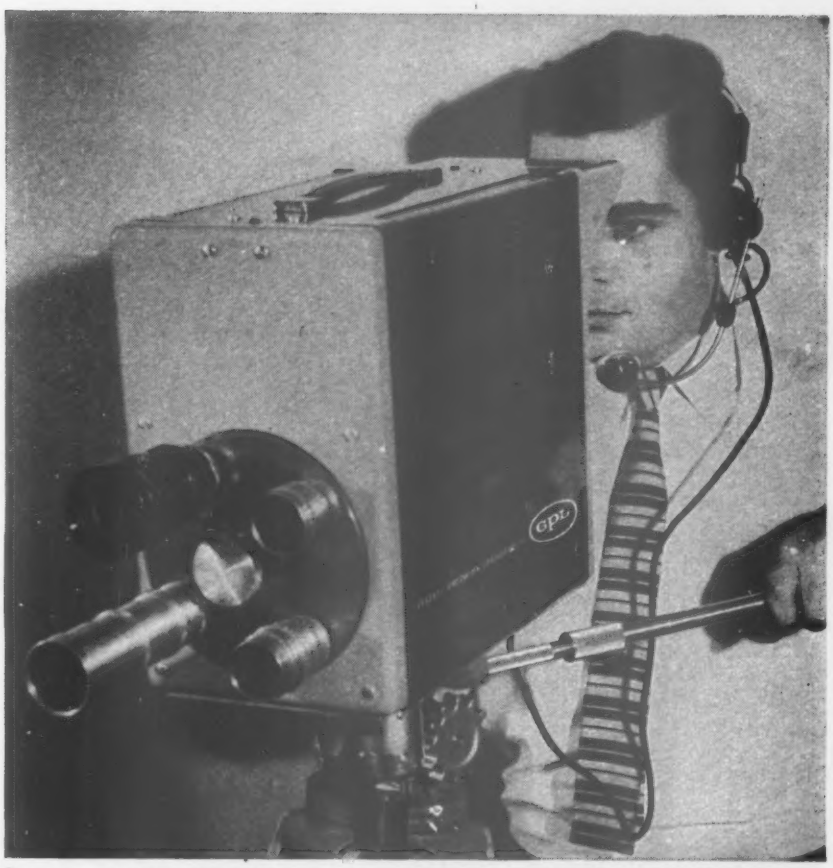
Branches in principal cities

The GPL/NTS Team.....

1. FIRST MEETING with NTS representative is discussion of school's problems. He shows GPL equipment, describes operation.



2. GPL CLASSROOM CAMERA gives all students front-row seats at science, laboratory and other demonstrations.



3. GPL VIEW-FINDER camera, for studio or classroom use. Makes it easy to follow every move made by the instructor. Light and compact, it draws little current. Plugs into ordinary electrical outlet.

4. BRIGHT, WALL-SIZE TV PROJECTOR lets 1,000 people watch broadcasts picked up "off the air," or closed-circuit programs, in school auditoriums or in large multi-purpose rooms.

5. SINGLE-UNIT CAMERA (GPL "500") has built-in controls. You can add accessories to expand system as your school's needs increase.

6. INSTRUCTING students to operate GPL equipment, NTS man explains how to use view-finder camera. Depend on him for service any time, anywhere.

For free demonstration or more information, write or phone collect to Mr. H. Barnett, Director, Educational Television Products Division, National Theatre Supply Company, 92 Gold Street, New York 38, N. Y.; BEekman 3-4170.

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Why do so many children dislike arithmetic? Why is it that many really good students depart from school ill-equipped to meet the demands of our scientific society? Considering questions such as these, the Monroe Calculating Machine Company has developed a new, advanced approach to the teaching of arithmetic. Based on the studies of Dr. Howard F. Fehr, Head of the Department of Teaching of Mathematics, Teachers' College, Columbia University, the techniques involve the use of classroom calculators. Results have shown that calculator-assisted classes are more proficient, comprehend more and, perhaps most important of all, enjoy arithmetic more. The nature and philosophy of calculator teaching are clearly stated in Monroe's new booklet: "Arithmetic Minus Mystery Equals Understanding." For a competent understanding of the problems of arithmetic teaching, send for your free copy today: Educational Department, Monroe Calculating Machine Company, Orange, New Jersey.

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(For more information, see last page)

continued from page 38

this to say about his summer's work at Pan American: "The contact was invaluable. It was possible to learn the professionals' methods and the way they approach a problem and the speed with which they get a job done even when there is no pressure on them. Seeing how a scientist organizes his work was of great value to me. Also, these friends in industry now want more than ever to help the schools. Now that I know some of them through personal day-to-day contact, I do not hesitate to call on them for assistance."

Other areas of help

These are some of the areas in which local industry is already aiding the Tulsa school system. There are others. For example: companies are donating films and filmstrips. They are making available to the schools materials for display and

Chemistry Teacher *John C. Newton, of Webster High School, sets up a test on a microphotometer in an oil company's research laboratory.*

D. E. *in Tulsa: A co-operative approach*

The letters DE stand for something special: Distributive Education. Basically this means that students go to school for half a day; work the other half. School subjects and the work they do on the job are coordinated. Only students who have acceptable grades can participate in the DE program. In Tulsa DE has been in operation for 20 years.

Three of the city's five high schools have the program, with 105 students participating.

An advisory committee of 21 representatives from downtown and suburban business firms, plus principals of the high schools, and other educators, is responsible for the program.

The committee meets twice a year, or as many times as special meetings are necessary. Members help provide jobs for the pupils enrolled in the program and work with school personnel in suggesting the kinds of materials that might be included in the classroom work.

Each Christmas season pre-Christmas training classes are set up after school for students who wish to work during the Christmas shopping rush. Following this training, students who have obtained jobs are excused from classes for one week preceding Christmas (if their scholastic standing is adequate) for work in Tulsa retail stores. This provides a substantial pool of extra help to local merchants and gives students firsthand business experience. More than 400 students worked in retail stores this past year.

The distributive education program is designed primarily for students who would otherwise find it financially difficult if not impossible to continue their studies.

Ohren Smullian, chairman of the DE advisory committee appraises the program this way:

"Distributive education is important for three reasons:

- *It brings to the schools the thinking of business as it affects business training.*
- *It dramatizes to the business community that business education is being provided in our schools and that these students constitute an excellent source of future talent for local business.*
- *It emphasizes to students the importance of the training they are getting in school."*

exhibit purposes. They are providing financial help to individuals or small groups or clubs working on special projects. (Sometimes $10 is the difference between a pupil's completing or dropping an experiment.) On a larger scale Tulsa companies are either inaugurating or increasing the granting of scholarships to students and teachers.

While much of the aid to schools in Tulsa is science oriented, it is not all scientific by any means.

Printing industry helps

Help in setting up classes in printing has come from the printing industry, which has suggested certain types of work experiences that might be provided as part of the regular class work.

The National Office Managers Association has aided in setting up practical courses in business education with an aim toward future employment of business education pupils in local offices.

This is what has happened in Tulsa in less than one calendar year. It is an impressive record. The Tulsa Plan is still new—but not untried. That it works—and works well—is recognized by both industry and educators.

That industry is pleased with the plan is evidenced by its steady and ever-increasing participation.

Educators' appraisal

The educators' appraisal is summed up by Dr. Mason: "Business and industry are giving us a type of assistance that has invaluable worth. . . . They are bringing our teachers and students a first-hand practical point of view of people and organizations working directly in the field. By participating in the Tulsa Plan they are also encouraging our teachers to improve their teaching as they become better acquainted with the problems encountered by industry. Such vicarious experiences as these are most necessary in good classroom teaching."

(*If you would find an extra copy of this article helpful in discussions with business executives in your community, we will be happy to send one to you while the supply lasts. Circle number 793 on the Reader Service Card.*)

The 30 Hour Club

Thirty hours a year doesn't sound like a lot of time, but Tulsa has made that much time pay off handsomely in educational dividends. The Thirty Hour Club is made up of engineers, geologists, geophysicists, chemists, mathematicians, physicists and other research personnel. It was organized primarily to concentrate volunteers in one common pool and to make their availability known to teachers.

Started in 1955, the club has three goals:

to encourage students to study science more seriously
to help teachers improve science instruction
to make science a more vital force in the curriculum

Membership in the club has already reached 30. Each member volunteers to give 30 hours of his time during the year to working with students and teachers in his own area of specialization. Teachers are urged to use the club's services as they fit into the instructional and counseling needs in their own schools.

The club's brochure includes not only complete information on its activities but also carries an application which may be submitted by a prospective volunteer as his registration blank. A flip chart listing 16 activities is included in the pamphlet and the volunteer is asked to check up to five of the activities in which he will participate.

Among the activities are: science fair judging, co-sponsoring of a science club, speaker at science clubs or assemblies, consultant for individual vocational counseling, senior adviser to institute of future scientists, speaker for community support groups and field trip arrangers.

A complete file on each club member is kept in the office of the science supervisor. A data sheet, showing the member's area of specialization as well as related fields of interest is kept, and when a teacher makes a request for a specialized service, the club member is contacted and carries out his assignment. He reports his acceptance of the engagement, and logs his time; the teacher also reports that the assignment has been filled.

Club members do not confine their service to spot assignments. For example, nine members are currently meeting one evening weekly at Tulsa's new Edison high school with a group of chemistry students engaged in individual and small group experiments.

Recently the club proposed that they furnish, from their ranks, substitutes for science teachers for a three-day period in March to release 10 teachers who plan to attend the National Science Teachers convention. During this period club members would give special demonstrations and lectures related to their own career work.

Dr. Scott Walker of Pan American Petroleum Corp., one of the forces behind the Thirty Hour Club, is realistically enthusiastic about the program, explaining that the success of the club is in some degree due to the almost complete lack of organization.

"You get some ideas that fail simply because they are over-organized," he says. "We don't organize; we just stand ready to help whenever the schools call on us. It's just another example of 'a little adding up to a lot.' "

How to help hard-of-hearing children

continued from page 43

move from classroom to classroom, or school to school, to give tests.

In cases where re-testing is necessary, because the first test indicated major hearing loss, the operator can make a complete threshold test to learn exactly where the child's hearing fails or refer the child to his physician. This can be done on the same portable audiometer which was used initially.

"We estimate," Mr. Singer says, "that in the first year of operation the cost per test is 40¢. That includes everything. The machine, the time, even the electricity. After the first year the machine is paid for and the cost drops way down.

"Of course there is more expensive equipment. Some schools prefer to give group tests first and individual ones later. This has certain advantages and some disadvantages. The costs on a machine for group testing, together with phones to handle 40 children at a time, is almost $1,300. Again, however, the machine must not be considered just a one year proposition."

And what do hearing experts hope to accomplish by testing children in school? "The earlier we learn about a hearing deficiency, the more we can do about it," Mr. Singer states. "If the trouble is located early enough, often we can cure it with medical treatment.

"Even if this is not possible, we can help the hard-of-hearing child by such measures as placing him in the front row of a classroom, giving him special attention in reading and speech classes, and generally by being aware of his problem. In some cases a hearing aid may be recommended. The teacher who takes care to enunciate more carefully when she is working with a hard-of-hearing child, accomplishes a great deal in helping him overcome his problem.

"Of course, not all hearing problems can be cured, nor are all caught early enough to be handled within the framework of a regular class. For this reason some schools have set up regular courses in auditory rehabilitation. These can be taught inexpensively because no equipment is necessary. A speech therapist can help most students.

Some schools have a therapist come in just once a week to work with a group of children. They get very good results.

"There is another place where the special class can help, since the child can learn how to use a hearing aid and to feel at ease with it."

It has been estimated that it costs about $300 to have a child repeat a grade. If, because his hearing problem is known a child can keep up with his correct grade, that in itself saves a school district a considerable sum of money.

"I suspect you would find that in schools where a hearing conservation program has been instituted," Mr. Singer concluded, "the district has actually saved money in the long run," and has made a child happier.

For more information on hearing conservation, circle number 790 on the Reader Service Card.

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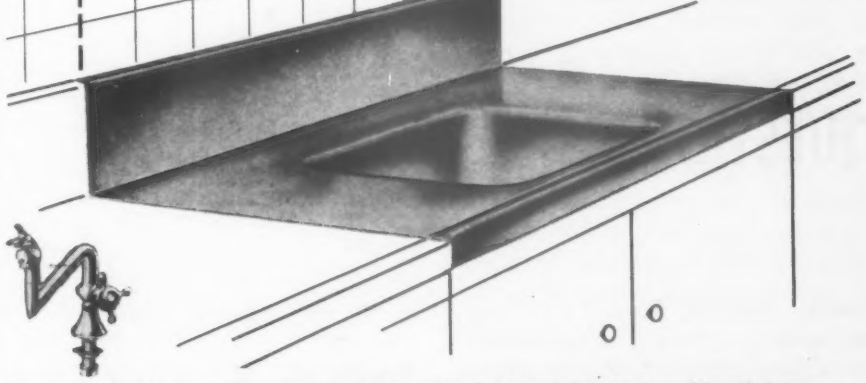

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(For more information, see last page)

continued from page 33

ing in at least the three lower grades and try to make the transition from home to school as painless as possible. The formal grown-up atmosphere of a high school is not helpful to the transition period."

Curtis & Davis: "We feel it could be properly done economically, but great care would necessarily have to be exerted to maintain the proper scale for the two different uses. Care would also be needed to maintain the proper atmosphere, which is quite different in an elementary school and a junior-senior high school."

Caudill, Rowlett, Scott: "We are convinced that such a school could be built properly and at no penalty in cost. And we see no reason why the approach to a solution such as this should in any way dilute the educational value of the building."

QUESTION 3: Do you believe such a structure could be designed so that conversion would not require major structural changes or excessive costs?

All of the panelists were more or less in agreement that ultimate conversion would not require major structural changes. Ketchum and Sharp summed up: "Major structural changes could easily be avoided with careful initial planning. But conversion costs may be relatively high unless considerable time is available for the actual conversion period. In short, true flexibility is not a free commodity, but in given circumstances it may well be economical as compared with its alternatives."

QUESTION 4: "Assuming that building costs stay constant, do you believe that building in two stages would cost very much more than building the entire junior-senior structure at one time?"

Caudill, Rowlett, Scott: "Certainly the building of any structure under two different bid lettings, in different years, would impose a penalty insofar as costs are concerned. This cost involves a contractor moving equipment onto a site and setting up operations at two different times. Under normal conditions, we would feel safe in saying that the penalty would be somewhere in the neighborhood of 5% of the combined costs of the two stages of the construction. This percentage, however, would vary according to the size of the project, the area in which the building is built, and the nature of the building itself."

Perkins & Will: "Building in two stages always costs more than building at one time. First, because it involves two separate contractual operations and, second, because in an inflationary situation such as we have now, construction costs for the second phase will inevitably be higher than for the initial phase."

Warren H. Ashley: "We believe that building in two stages would cost possibly 10% more than building the entire building at one time. However, to construct a building with more rooms than you need to start with is expensive, too. You have to maintain these rooms whether they are occupied or not. Another factor is that you will be paying interest on money used."

Ketchum and Sharp: "Assuming unchanging building costs, any significant difference in the cost of building a school in one stage or two is more apt to depend on factors other than volume of building. These factors might include: (1) the incapability of a smaller local contractor to handle the combined project (thus missing a possibly lower cost in doing them separately); or (2) missing the services of a larger, more efficient contractor who would not be interested in the separate projects. Another cost factor is the type of planning which might (or might not) make a future addition easy to construct and simple to relate to the initial mechanical systems."

Curtis & Davis: "Building any project in more than one stage is usually more expensive than constructing the entire plant under one contract—but this cost might not be excessive."

Daniel, Mann, Johnson & Mendenhall: "The major difference in cost would be in the contractor's overhead and salaries for job superintendents and the like. Salaries for overhead of administrative school personnel would also be double. Assuming the two stages of construction were sizeable, say a half-million dollars or more, the materials used in both stages would be purchased in quantity. No ap-

preciable savings on materials would be realized if it were built as a unit. If the two stages were relatively small, then the overhead costs might get a little out of line. We would like to add that building costs are not, and will not be, constant for some years to come. The six basic trades on the West Coast are just now negotiating three-to-five year contracts, with additional fringe benefits and set yearly wage raises, which will be reflected in future building costs. Certain basic work should be done under the first contract, such as doing all the grading, drainage, streets, practical amounts of paving, and layout of the utilities. The utilities should be set for flow and capped for easy future connection. The buildings should be planned so that a future contractor can get in and out, so that he has logical areas designated for his future construction storage, and so that he can work outside of the school circulation pattern."

QUESTION 5: What is your over-all opinion, as a practicing schoolhouse architect, of the general idea of this convertible school?

Daniel, Mann, Johnson & Mendenhall: "Our opinion is that it is, at best, a makeshift. As far as construction, design and use as a plant is concerned, there is no great problem. Should the plant be operated as an elementary, junior high and senior high school, or any combination at any stage, there will be problems from an administrative standpoint . . . We are afraid that the whole idea is to save tax money and a lot of bother to the board members. This situation would reflect poor thinking, since actually much more money will eventually be spent in trying to patch up an incongruous situation. We believe the idea of a convertible school is more of an educational problem than a school design problem. We can design for almost any situation, but the human factor sometimes takes over, and we tend to forget the basic reason for building schools is to train our youngsters and allow them proper growth. . . . Moreover, we believe that the premise is erroneous for several reasons. If the present high school will handle the students from the present elementary school, and no more elementaries are needed, then no more high schools are needed beyond meeting the momentary bulge. The birth rate trend is continuing."

Caudill, Rowlett, Scott: "It is our feeling that the idea of the convertible school is a very real and practical solution to the situation outlined. So far as general classroom areas are concerned, it is difficult for members of our firm actually to see too much difference between classrooms for elementary grades and classrooms for high school grades. One of the most important characteristics of a good classroom is *space* which is flexible enough for a teacher with imagination to use to the best advantage. The equipment and educational tools are the items which really measure the difference between the elementary and high school teaching programs. The design of space with flexible movable partitions, for example, would certainly impose no limitation upon the conversion of space to serve any desired use. Since the building elements that really distinguish the difference between a primary and secondary situation exist in such facilities as an auditorium, gymnasium, band room, home economics areas, science laboratories, etc., we see no reason why the plan would not be a practical consideration."

Warren H. Ashley: "We think the general idea of a convertible school is practicable if it is designed as a high school and used temporarily as an elementary school. We do not believe that it would be practicable or economical to design it as an elementary with the ultimate hope of converting it to a high school. Such a procedure would be extremely expensive. However, we think the answer to this hypothetical problem would be to build a new high school and move the high school pupils into it immediately and convert the present high school facilities over to elementary use."

Curtis & Davis: "The suggestion of a convertible school that could be built in stages presupposes that the growth of the elementary pupils will not overtax present primary elementary facilities. We believe this will not prove to be the case."

Perkins & Will: "Our over-all opinion is that the general idea of a convertible school is perfectly reasonable but we doubt if it will do much toward easing the school housing situation. Patterns today in rapidly growing areas indicate a pretty substantial need for high school and junior high school children right along with the elementary groups so, rather than convertible schools, you find yourself simply building as many of *both* kinds of schools as you possibly can afford—and keeping it up."

Ketchum and Sharp: "Actually, every school building (or any other publicly used building for that matter) should be built for flexibility in future planning. Though flexibility costs more initially, the one certain prospect is that programs of educational needs will change continually and schools should be able to change with them. True flexibility or convertibility means more than just relocatable partitions. It involves possible changes in lighting, electrical services, heating, ventilation and other equipment, as well as possible variations in relationships of indoor space to each other and to the out-of-doors. In this era of rapid change in our ways of working, playing and studying, our buildings should stay 'loose' in order to maintain their ability to keep step with the times. Until now, at least, the emphasis has been on short term savings. This must be changed." **End**

PRESS RELEASES

News from the business firms serving your schools

New line of shop equipment is shown

A complete new line of steel shop equipment has been announced by the Borroughs Manufacturing Co.

The manufacturer calls the equipment ideal for various operations in schools and universities. Each item is sturdy, functional, good looking and economically priced, and was designed with both the buyer and the student in mind. It is available in either grey or green.

The line includes 21 work benches, portable and semi-portable units, two utility carts, eight different styles of

tool stands, two shop desks and a table.

Accessory components for the basic work bench comprise shelves, drawer units, footrests, guards, ledges, portable fittings and pressedwood top covering. Back panels and end panels are also available.

For more information, circle number 798 on the Reader Service Card.

■ ■ ■

Vending machines serve milk drinks

A variety of milk drinks can be served from two new vending machines produced by Glascock Bros. Manufacturing Co., Muncie, Ind.

Served in cups, cold milk, flavored milk and a new pre-mixed "chocolate shake" drink with a milk base are available from the machines. Served at a constant temperature of 32° to 33°, the liquids are aerated between the tanks and the cup, a step which is said to add markedly to the flavor.

Each vending machine holds either two 5-gallon or two 10-gallon containers of milk product, and can serve as many as 380 drinks without refilling. The machines can be adjusted to serve any size drink up to eight ounces. The cabinets are lined with stainless steel and are said to meet health department standards and approval by local health officials in 36 states.

For more information, circle number 789 on the Reader Service Card.

■ ■ ■

New viewfinder TV camera chain introduced

A new viewfinder television camera chain for classroom or studio use has been introduced by General Precision Laboratory Inc.

The compact TV system, known as

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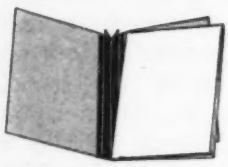
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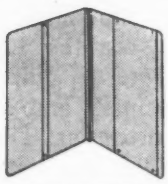
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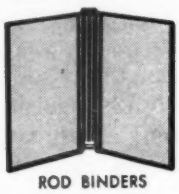
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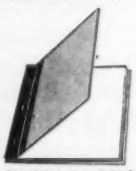
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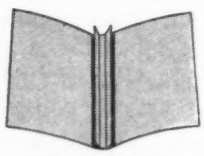
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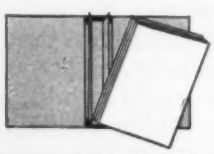
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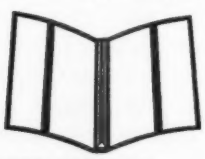
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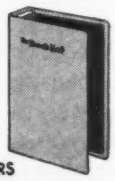
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The 28 pound TV camera is equipped with high definition 5″ viewfinder with aperture correction, front and back tally lights and intercom. The four lens turret is manually operated from the back of the camera.

For more information circle number 796 on the Reader Service Card.

■ ■ ■

Lightweight vacuum does heavyweight job

A new, all-purpose, wet-dry vacuum cleaner, claimed to be the first in the low price field with moisture-proof motor, 10 gallon capacity tank, easy-roll wheels, handle and tool basket, is being introduced by Clarke Sanding Machine Co. of Muskegon, Michigan.

The new vacuum cleaner is reported to clean everything from floor to ceiling, including bare floors, walls, carpeting, upholstery, bins, shelves, venetian blinds, overhead pipes and furnace boilers. Attachments are available for all jobs.

According to Clarke, the new low

cost unit contains many of the performance features offered by the company's recently introduced line of heavy duty vacuum cleaners.

The new vacuum cleaner, model 500, has handle bar and 10″ wheels with semi-pneumatic tires for easy portability. It is also equipped with a wire tool basket which holds most necessary vacuum cleaning tools.

For more information, circle number 797 on the Reader Service Card.

■ ■ ■

New outdoor lighting fixture defeats vandalism

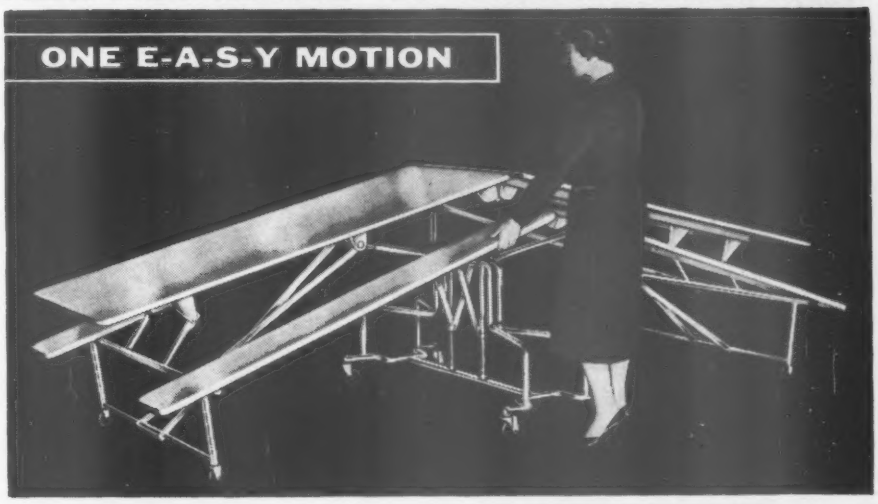
A new shatter-resistant outdoor lighting fixture, just announced by Silvray Lighting, Inc. and Associated Companies, of Bound Brook, N. J., is designed to eliminate the costly losses resulting from vandalistic breakage.

The unit features a Plexiglass diffusing globe which is highly resistant to shattering and is topped by an aluminum reflector. All joints in the units are sealed by Neoprene gaskets, which keep out insects, dirt and rain. All metal parts are natural-finished aluminum, requiring no maintenance.

The unit, which can be installed and serviced by one man, is designed to use incandescent, fluorescent or mercury vapor lamps, and either post-top or pendant mounting.

For more information circle number 799 on the Reader Service Card.

NEW HOWMATIC "12" BENCH AND TABLE



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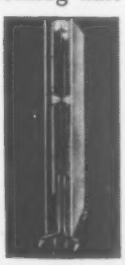

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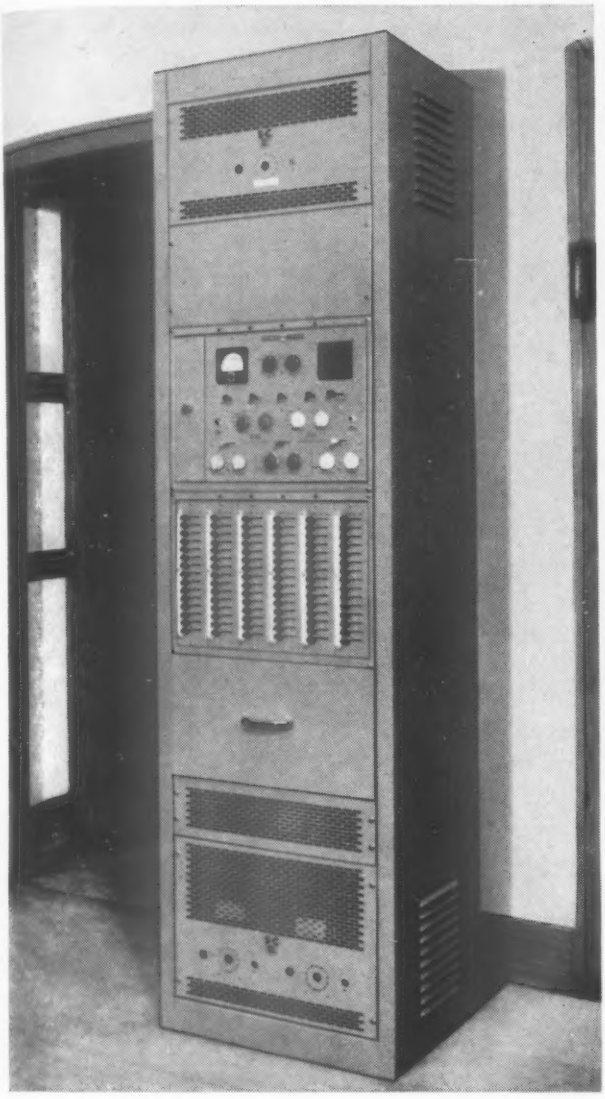
Key	Advertiser	Page
700	Allied Radio Corp. Agency: George Brodsky Adv., Inc.	27
701	Aluminum Safety Products, Inc. Agency: A. C. Bury, Inc.	8
702	American Air Filter Co. Agency: Doe-Anderson Advertising	24-25
703	American Photocopy Equipment Co. Agency: Irving J. Rosenbloom & Associates, Inc.	49-50
704	Bausch & Lomb Optical Co. Agency: Wolff Associates, Inc.	8
705	Bentson Mfg. Co. Agency: J. D. Culea Advertising	67
706	Bradley Washfountain Co. Agency: Kirkgasser-Drew Advertising	70
707	Brulin & Co., Inc. Agency: Drennan W. Hart and Co.	27
	The Brunswick-Balke-Collender Co. Agency: Garfield—Linn and Company	9-16
708	Dunham-Bush, Inc. Agency: William Schaller Co., Inc.	6
	E. I. duPont de Nemours & Co., (Inc.) Agency: Batten, Barton, Durstine & Osborn, Inc.	
709	*Fabrics Division, "Tontine"*	26
710	*Grasselli Chemicals Dept., "Ludox"*	71
711	Gaylord Bros., Inc. Agency: Barlow Advertising	80
712	General Precision Laboratory Agency: Geer, DuBois & Co., Inc.	72-73
713	Haldeman-Homme Mfg. Co. Agency: Harold C. Walker Advertising	18
714	Haws Drinking Faucet Co. Agency: Pacific Advertising Staff	77
715	Holcomb & Hoke Mfg. Co., Inc. Agency: Keeling & Co., Inc.	7
716	Hough Mfg. Corp. Agency: Fuller & Smith & Ross, Inc.	5
717	Howe Folding Furniture Co. Agency: Lawrence Peskin, Inc.	81
718	Hussey Mfg. Co., Inc. Agency: Ray Mills Advertising	44
	International Business Machines Agency: Benton Bowles, Inc.	64-65
720	Johnson Service Co. Agency: St. Georges & Keyes, Inc.	28-29
721	Monroe Calculating Machine Co. Agency: L. H. Hartman Co.	74
722	National Theatre Supply Agency: Geer, DuBois & Co., Inc.	72-73
723	The Peabody Seating Co., Inc. Agency: Batten, Barton, Durstine & Osborn, Inc.	20-21
724	Radio Corporation of America Agency: Al Paul Lefton Co., Inc.	1
725	Sargeant & Greenleaf Agency: Hav Nash & Associates	66
726	Singer Sewing Machine Co. Agency: Young & Rubicam, Inc.	Cover II
727	John E. Sjostrom Co. Agency: Richardson, Thomas & Rushman, Inc.	23
728	Stromberg-Carlson Co. Agency: The Rumrill Co., Inc.	Cover III
729	Stromberg Time Corp. Agency: G. F. Sweet & Co., Inc.	4
730	United States Plywood Corp. Agency: Kenyon & Eckhardt	Cover IV
731	Vestal, Inc. Agency: Martine-Flaugher Advertising	68-69
732	Wayne Iron Works Agency: Harris D. McKinney, Inc.	2
733	Wayne Works Div. of Divco-Wayne Corp. Agency: Ruben Advertising	22



KIMBALL HIGH SCHOOL, at Royal Oak, Michigan, built a brand-new school, got this brand-new sound system. It's Stromberg-Carlson's SS-300 type system, includes the special Red Telephone Emergency Alarm.

DONDERO HIGH SCHOOL, in the same town, came back to Stromberg-Carlson for this SS-800 type sound system when they enlarged and modernized their school recently. Its new features and new look replace an older Stromberg-Carlson model purchased nearly 20 years ago.

Listen to what goes on in these high schools!

A voice pages clearly to any, several, or all of the classrooms . . . an English class enjoys a recording of Shakespeare's *Macbeth* . . . music makes the cafeteria a pleasant place . . . a built-in intercom in every loudspeaker provides contact to any room—and gets an answer!

All-in-one—All these modern methods of sound transmission can be yours in a school system by Stromberg-Carlson . . . tailored exactly to your requirements.

You might want to add a radio hookup to rebroadcast programs of local and national interest to your students. Or include the new Red Telephone Emergency Alarm . . . lets you make instant loudspeaker contact everywhere in the school *from anywhere* in the school.

Pinpointed to your needs—*Your* special needs—in audio-education or intercommunication—are fulfilled with a single Stromberg-Carlson system such as this. A sound system will be engineered from standard components to fit all your special requirements—whether you're building, rebuilding, or modernizing.

You can have a survey and proposal—*without obligation*—to determine the sound system most proper for your school. Contact your nearest Stromberg-Carlson representative today. Or drop us a card and we'll arrange for a representative to call on you.

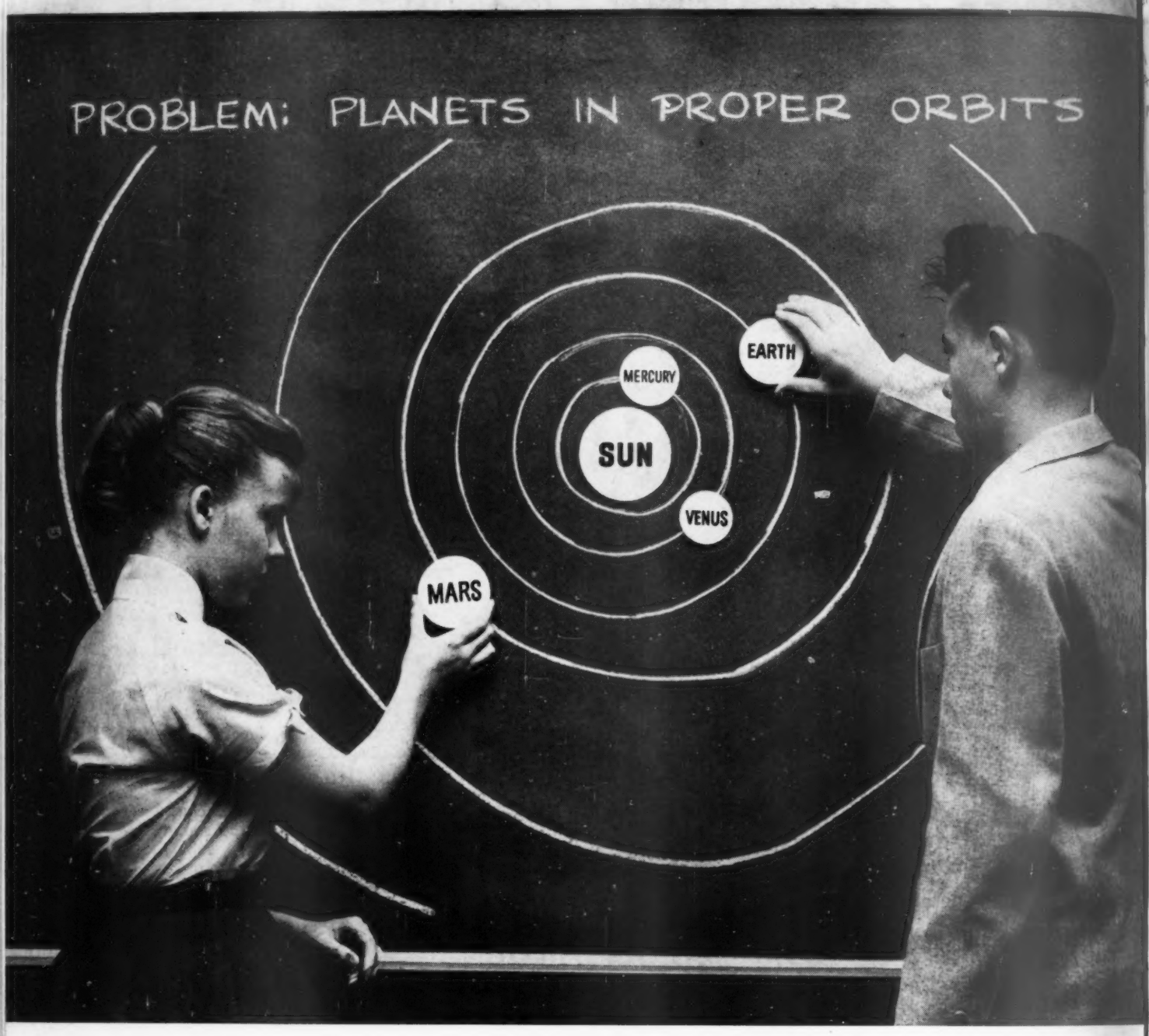
"There is nothing finer than a Stromberg-Carlson"

HIGH FIDELITY • SOUND SYSTEMS
SCHOOL SYSTEMS • DIAL-X INTERCOM
AUTO RADIOS & SPEAKERS
PACKAGED PARTS

STROMBERG-CARLSON
A DIVISION OF GENERAL DYNAMICS CORPORATION
Spec. Prod. Div. • Electronics Center, 1406 N. Goodman St. • Rochester 3, N. Y.

Electronic and communication products for home, industry and defense

(For more information, see preceding page)



This magnet-holding chalkboard helps keep costs down to earth

Double-duty Weldwood Chalkboard helps these children organize a solar system with planet symbols attached to magnets that cling to the glare-free writing surface. Available in five handsome colors, Weldwood Chalkboard brings new functional beauty to the classroom.

And because it's so durable, Weldwood Chalkboard also brings long-range economy to school construction or remodeling. Its porcelain-on-steel face never needs resurfacing. It won't shatter, warp, break, or buckle, thanks to its waterproof plywood core. And it is *guaranteed for the life of the building.*

Available also in matching colors is Weldwood Tackboard – a superior bulletin board material. Special Weldwood aluminum trim and chalk trays complete the installation. A Weldwood Architects' Service Representative will be glad to consult with your architect or planning committee. There's no obligation.

Free School Planning Booklet. "Weldwood Products for School Construction and Remodeling," has 16 pages of photographs showing low-maintenance Weldwood Products installations in schools. For your copy, write to:

United States Plywood Corporation, Dept. SM3-58, 55 West 44th Street, New York 36, N. Y.

(For more information, see page 82)